PRODUCTS finishing

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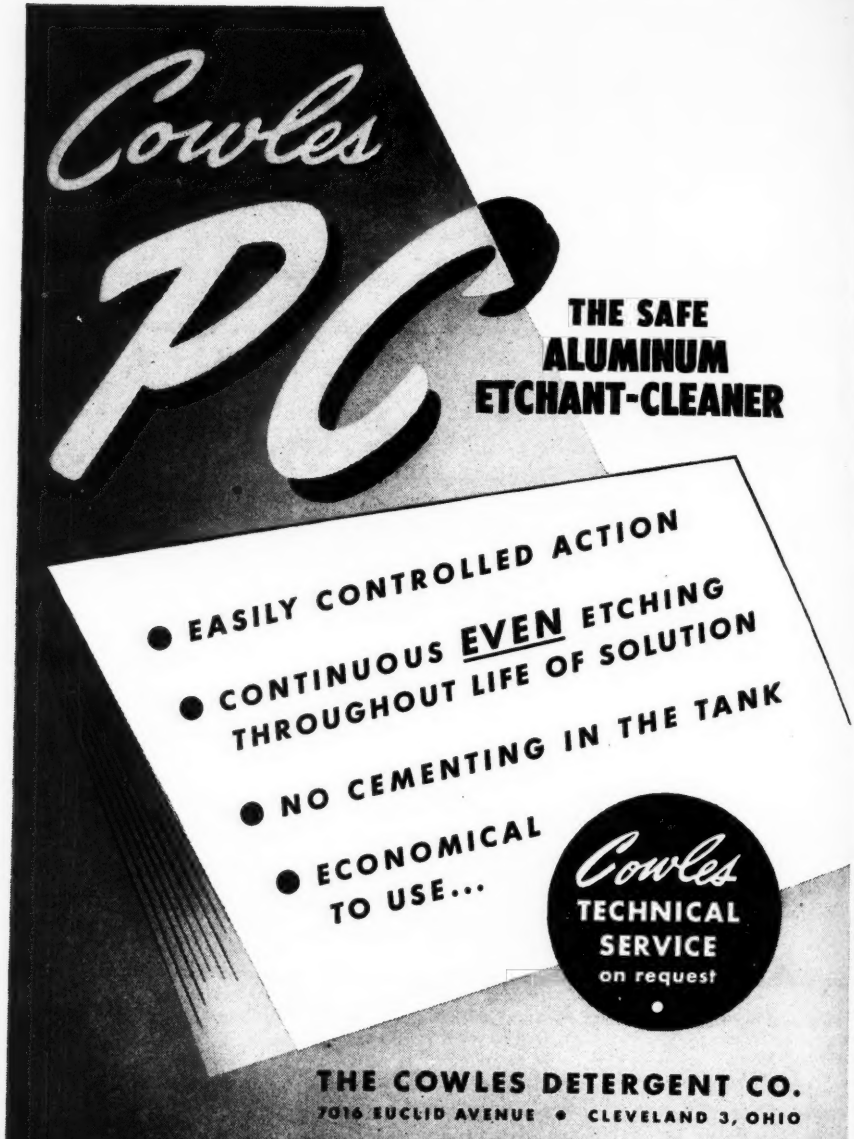
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METAL CLEANER DEPARTMENT

Products Finishing

The Boob

Emil Larson once said that every shop has a boob. A boob, said Emil, is a fellow who isn't too overly ambitious, who never expects to receive credit for anything that he does, and who is always ready to tackle anything.

"Take me, for example," Emil pointed out. "I'm a boob. I like to work here, and I'll prob'ly stay here the rest of my life. They all know it, so consequently I get all the grief of the shop. Whenever anything wants fixin', who fixes it? Emil. When anyone wants to make some special contraption work a certain way, who inherits the job? Emil.

"They used to have a saying, let George do it. But not any more. Ole 'Fix-it Emil' they take it to now, 'cause they know I like to tinker, and I don't give up easy."

It would seem that this last just about describes it. The "boob" doesn't give up easily. He's just too stubborn to give up, so, never giving up, he eventually gets there.

What about the boob? Is he a myth, or is he real? Does he have his counterpart in my establishment?

Mine is a metal-finishing shop, and I'm sure I could look up and point an unerring finger at our boob.

He's a quiet fellow. His name is Pete. Funny thing about Pete, he's been here for years—longer than I have. And I take pleasure in the thought that he'll be here for many, many more years.

There's something about Pete that makes the whole business seem very firm and solid. You see, Pete really loves his work, and that, after all, is what counts the most.

By BURR PRICE

NOW they're calling it a one-front war—but what a front! Vast water-borne distances. Supply depot problems multiplied many times over those of the European theater. A trained and fanatical foe, resorting to suicide tactics in his present desperation. Tough going! That's what it will be, experts agree, for the millions of American boys moving from home and Western front along countless routes to join the armies which have been so wonderfully island-hopping up from Australia and New Guinea toward Tokyo.

And there's an added touch to that grim picture of what's ahead: the world's worst atmospheric conditions. The Nips are steadily being driven out of their conquered areas, back toward the homeland and their final stand, but as every American unit has moved forward it has been accompanied by enemies within its ranks: Old Man Moisture, ever-present and powerful; myriads of fungi whose capacity for destruction is almost beyond belief; and vicious mites which alike menace the health of men and the efficiency of their equipment.

Since the beginning, these ruinous

(Above) An American mortar team sets up equipment in a Filipino rice field to fire at Jap positions harassing infantrymen as they advance on Luzon. —*Acme Photo*

factors have been combatted by all branches of the Army and Navy, by the technicians of equipment manufacturers and the scientists of the protective coatings industry, and the lessons which have been learned since Guadacanal and which will be learned from continuing field experience and laboratory research here in this country are of vital concern to the American metal products finishing industry.

Mr. Price is an editor, publicist, and writer with many years of experience in this country and abroad in the fields of daily journalism, business paper publishing, and magazine work. After an early training on the New York Herald under James Gordon Bennett, Mr. Price became editor-in-charge of the Paris edition of the New York Herald during World War I and was special correspondent at the front and at the peace conference.

After the war, Mr. Price became director of the Press Section of the Belgian Bureau of Economic Affairs and toured Europe and the United States gathering data. On his return to this country, he directed many educational and promotional campaigns.

Since 1930, Mr. Price has been actively engaged in the paint, varnish, and lacquer industry and is now vice president of the Schnell Publishing Company, publisher of the Oil, Paint and Drug Reporter and of National Painters Magazine. He has written on the subject of paints and varnishes for national magazines in many fields; is chairman of the Committee on Public Relations for New York Paint, Varnish and Lacquer Association, chairman of the Public Relations Committee of the Painting and Decorating Contractors of America, and also a member of the Council on Paint Styling of the National Paint, Varnish and Lacquer Association, which became inactive at the outbreak of the war.

Of special interest and importance is the benefit which will accrue from these tests, carried out perforce under the most trying conditions in the tropics, to products finishing companies which will go into the vast export market for American goods that will be opened up with V-J Day and a resumption of world trade. New fields doubtless will be developed in countries with difficult atmospheric conditions, where the demand will be for equipment finished to withstand moisture and fungus attacks to the maximum. Results achieved also will be of direct value to manufacturers for the domestic market, inasmuch as certain sections of this country have unfavorable moisture conditions, and fungi varieties found in our southern states are akin, in many instances, to those which were found by our armed forces in the strange lands on the other side of the globe.

The incredible and destructive effect of mildew and fungus attack on troop equipment was realized at the very outset of the American campaign in the Southern Pacific to stop the then on-rushing Japanese invaders. While not pertinent to this article on metal protection, it is interesting to record some of the devastation wrought on items of leather, fabric, or cellulosic composition. It was not uncommon for a soldier to reach for his shoes in the morning and find them so full of green mold that they could not be worn, and instances were reported where a man plunged his hand through the wall of a tent while merely attempting to test its tautness. All such items have now been mildew-proofed by impregnation with effective fungicides; also, chemical treatments have been

An American soldier with telescope and sheltered from the hot sun by a tarpaulin keeps a sharp lookout for Japs on a hill of an island in the South Pacific.
—Acme Photo

perfected for use on the clothing of our boys to make them resistant to the attacks of disease-carrying mites. Still parenthetically, the development of insect-repellants in this war is another achievement which will have wide application in our postwar world.

The attacks by fungus as above mentioned, while of serious inconvenience, were not such a menace to the successful conduct of a campaign as the effect of these micro-organisms on the various types of communication equipment on which unit commanders were dependent in their operations: field radios and telephones, electrical generators, electrical mapping equipment searchlights and the various types of optical instruments used in the field.

Fungus growth on the apparently incompatible surfaces of metals, plastics, and glass from which such instruments are made has been so prolific that it has been the cause of moisture-traps, which have resulted in electrical leaks, short circuits, and consequent complete failure in an incredibly short time—a few days in some cases. There is an instance on record where an exceedingly costly electrical transmitter was put out of order in about two weeks, necessitating replacement.

Fungi have been known to be carried into the innermost delicate workings of vital instruments by mites, thus destroying their effectiveness, and the acid from decomposed mites has etched a pattern on the glass of telescopes and field glasses to the point that visibility was destroyed. Acting promptly to protect the functioning of communications equipment, the Ground Signal Service of the United States Signal Corps and other operational branches of the Army took immediate steps to utilize fungicides which would prevent the growth of micro-organisms. The principle of impregnation, which was so successfully followed in fabrics, leather, and so on, could not, of course, be used in connection with metals and plastics, and it was decided to incorporate the fungicidal chemicals in a surface coat of lacquer or varnish which could be sprayed or brushed over the equipment and which would serve the highly desirable supplementary purpose of providing a moisture-resistant film of good electrical properties to help

"SIAMESE TWIN"

WASH, RINSE AND DRY UNITS SAVE FLOOR SPACE!

NOT A STUNT or freak, these two complete A-F wash, rinse and dry units were designed in one housing to save floor space. With overhead trolley conveyor in one unit it cleans metal parts in a vertical position, and with a wire mesh conveyor in the other it cleans metal parts in a horizontal position.

While each cleaning operation can be performed separately or both at the same time, the two machines are shielded from each other so that cleaning in one does not affect the other. A great economy is provided by both machines drawing their solution from the same tank. For full descriptive literature of this and other A-F Metal Products Cleaning and Finishing Equipment, write

THE ALVEY-FERGUSON COMPANY
629 Disney Street Cincinnati 9, Ohio

CONVEYING MACHINERY A=F

Alvey-Ferguson

maintain the efficiency of the equipment.

A number of leading manufacturers of protective coatings have worked closely with the armed services in developing these fungicidal protective coatings. While formulations may not be given in detail, it may be said that some of the principal fungicidal chemical materials employed have been the mercurials, the chlorinated phenols, and salicylanilide.

Latterly, more attention has been given to the development of materials which will serve as moisture barriers in the formulation of which chemicals of cellulosic, phenolic, and melamine types have been employed. These basic protective finishes, designed for permanence, have recently been supplemented by the development of a temporary coating for the protection in transit of irregularly-shaped metal products from heat, cold, dust, moisture, and salt air; also from the wear and tear of handling. It is an ethyl-cellulose compound, produced in slightly differing compositions by the Hercules Powder Company, which has named it "Plastic Peel," and by the Dow Chemical Company, whose product is known as "Stripcoat," both names derived from the fact that when the coating has served its purpose it can be readily removed, leaving the item clean, dry, unblemished, and ready for use.

These unique materials have been of great value in shipping metal replacement parts for airplanes to the tropics, and they are applicable on the highly-finished surfaces of other odd-shaped parts such as crankshafts, gears, camshafts, tools, surgical instruments, cylinder heads, axle shafts, valves, and so on. They are not used on pieces which have cavities or hard-to-get-at passageways, as removal would then be difficult or impossible.

The coating is soft, pliable, and easily cut and is applied in a molten, highly viscous state. Mineral oil is combined with the ethyl cellulose, the oil dissolving and swelling the ethyl cellulose much the same as water causes gelatine to swell. Paraffin may be used to improve moisture resistance along with plasticisers and anti-oxidants.

Parts to be coated must be thoroughly cleaned and are then immersed in the melted compound for a maximum of ten seconds. The parts, being cooler than the compound, which at about 375 degrees F. is only slightly above the solidification point, cause the compound adjacent to the parts to

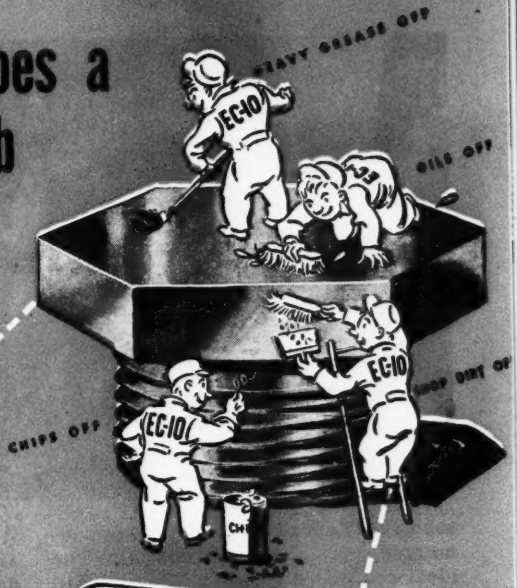
A bombproof shelter shields this telephone switchboard and the Marine operator from the bombing of U. S. positions on an American-held island. The switchboard, with connecting lines running out to all field forces, is portable and can be moved on a few moment's notice. —*Acme Photo*

Pennsalt EC-10 does a quick, thorough job

Oils, greases, metal chips and shop dirt are quickly removed from steel bomb fuse plugs in the precleaning process with Pennsalt EC-10. Pennsalt K-7 is used in the subsequent Anodic Cleaning process.

This combination makes it possible for each eight hour shift to produce an average of 9700 fuse plugs with only 1/10 of 1% rejects—a step up in production of 15%.

The following is the actual case history of this operation.



FUSE PLUGS (BOMB)

PENNSALT EC-10 AND PENNSALT K-7 CLEANING PRIOR TO ZINC PLATING AND IRIDITE DIP

PROBLEM — To clean steel bomb fuse plugs free of oils, greases and filings prior to zinc plating and subsequent "Iridite" dip coating.

EQUIPMENT USED — A 200 gal. solvent dip tank followed by a spray rinse and a 325 gal. reverse current alkali cleaning tank followed by a dip rinse tank.

METHOD

PART 1—PRECLEANING

1. Use Pennsalt EC-10 concentrated, room temperature; soak for 30 seconds.
2. Cold water spray rinse.

PART 2—ANODIC CLEANING

3. Use Pennsalt K-7 at 50 to 100 amps./sq. ft. ct 8 oz./gal., 200° F. for 30 seconds.
4. Hot water rinse.
5. Muriatic acid dip.
6. Cold water rinse.
7. Zinc Electroplate.
8. Hot water rinse.
9. Hot "Iridite" dip and then dry air.

Special Chemicals Division Products

Acid-, Alkali-, and Solvent-proof Cements • Lead Fluoborate Concentrates • Fluoboric Acid • Acid, Alkali and Solvent Emulsion Type Cleaners • Paint Strippers • Pickling Agents.

"THE PENN SALT MAN"
FIRST A TECHNICIAN ... THEN A SALESMAN

Penn Salt's Special Chemical Division men are well trained in the application of chemicals to industry's problems. If you have a metal cleaning problem, don't hesitate to seek the advice of "THE PENN SALT MAN." He will advise you without obligation.

SPECIAL CHEMICALS DIVISION

PENNSYLVANIA SALT MANUFACTURING COMPANY

Chemicals

1000 WIDENER BUILDING, PHILADELPHIA 7, PA.

New York • Chicago • St. Louis • Pittsburgh • Cincinnati • Minneapolis • Wyandotte • Tacoma

An American mechanic in the jungle strips "Plastic Peel" from a gear. Made by Hercules Powder Co., Wilmington, Del., this corrosion-protective coating is an ethyl-cellulose base compound which is melted and applied to the parts to be protected by dipping. On arrival of the parts at their destination, the coating is peeled off, leaving each part clean, dry, and ready for installation.
(Courtesy Hercules Powder Company)

solidify. The longer the parts are submerged, the thicker the coating. The ideal coating is between 0.06 and 0.10 inch thick. The coating is assumed to just barely adhere to the metal surfaces, and, because of this characteristic and its tensile strength, it is easily and quickly peeled off.

Parts may be either single or double dipped. If a part is to be single dipped, it is usually suspended by a wire or cord. Double dipping is done by dipping approximately half of the part in the melted compound, allowing this to cool for approximately thirty seconds, and then immersing the undipped section, allowing a lap of about one inch.

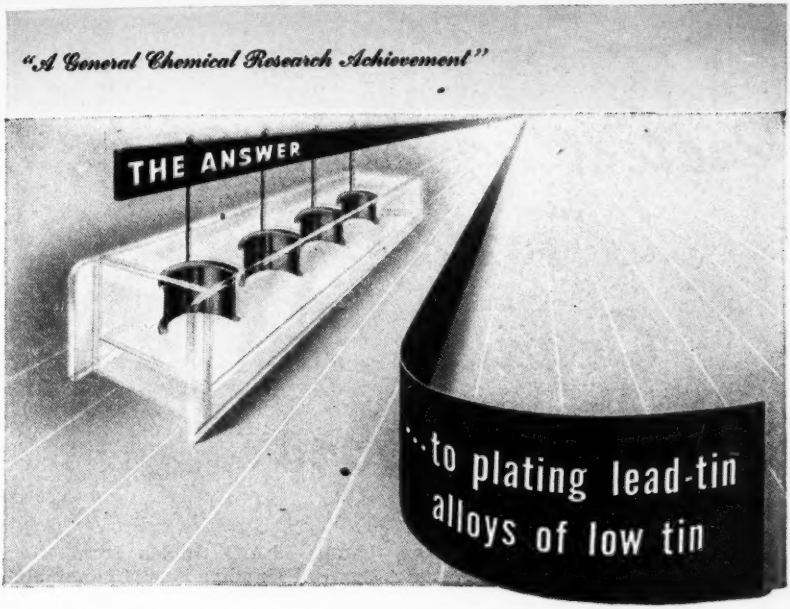
Either hand or mechanical dipping may be employed, however, the latter is considered preferable since it affords greater speed of operation and uniformity of coating and reduces the possibility of contamination and corrosion from handling. Special equipment has been designed for this type of coating by the Youngstown Miller Company, Sandusky, Ohio, and the Aeroil Burner Company, West New York, N. J.

Today, all of the available coating is going to the armed forces, but here again, as in the fungicidal and moisture barrier finishes described at the outset, its use in the postwar operations of metal-finishing concerns is readily apparent to protect such items as drills, cutlery, and various types of hardware against rust and corrosion.

Oakite "Tri-San." A 20-page booklet descriptive of a triple-duty sanitation material for deodorizing, cleaning, and disinfecting in one operation has been prepared by Oakite Products, Inc., 20 Thames St., New York 6, N. Y. Illustrations showing the various applications for Oakite "Tri-San" are provided throughout the booklet, copy of which is available free upon request.

Bitumastic Industrial Coatings for the prevention of corrosion from atmospheric conditions and chemical fumes are described in a four-page illustrated folder published by the Wailes Dove-Hermiston Corp., Westfield, N. J. Information on the selection of the proper coating for any specific problem is also included in the folder, copy of which is available free by requesting Folder 944.

"A General Chemical Research Achievement"



For more than 25 years metal finishers have sought a successful means of plating lead-tin alloys in the low tin ranges. "Not feasible . . . inoperable . . . too many variables," read published reports on method after method.

Now—with the new chemical tools of General Chemical Fluorine Research—platers are achieving the "impossible."

Here's how: General Chemical *Lead* and *Tin Fluoborate solutions* are thoroughly compatible. Combined in baths using dual or alloy anodes, they plate dense, fine-grained lead-tin alloy deposits uniformly, simultaneously, and *with the tin easily controlled at low ranges!*

Thus, *in one operation* an alloy coating is produced that is harder, more wear-resistant, and has a more attractive appearance than lead plate alone. Little wonder that leaders in the bearing industry are adopting the combination fluoborate bath for lead-tin alloy plating of their products!

"First in Fluorides" For working samples of General Chemical's Lead, Tin, or other fluoborate solutions—for sound, practical information on their applications, based on the research and "know how" of America's foremost producer of fluorine compounds—contact the nearest General Chemical Sales and Technical Service Office or write General Chemical Fluorine Division, 40 Rector Street, New York 6, N. Y.

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In Canada: The Nichols Chemical Company, Limited
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Protecting Workers from the Toxic Effects of Organic Solvent Vapors

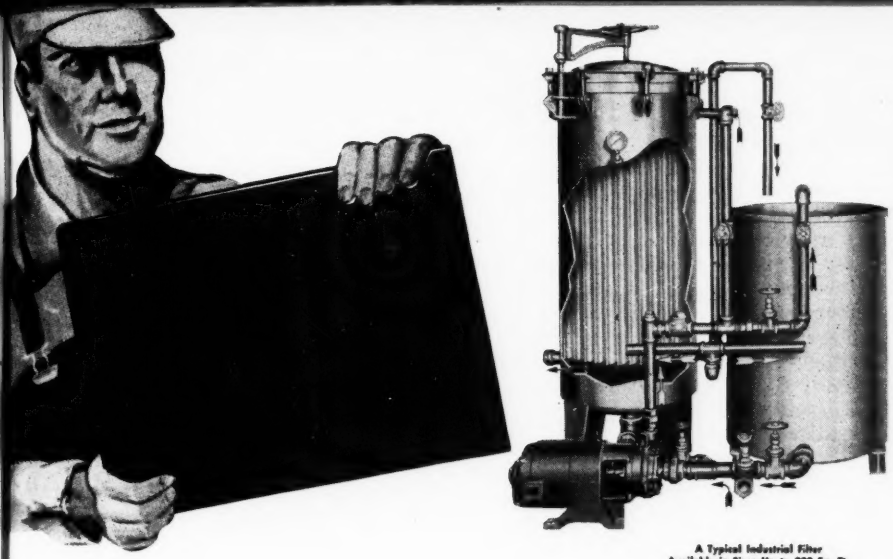
ALL volatile organic solvents, including gasoline, benzene (benzol), naphtha, carbon tetrachloride, and trichlorethylene, give off toxic vapors. Hence, workers using any of these solvents in cleaning, degreasing, cementing, and other operations must be protected from the effects of inhaling excessive amounts of their fumes.

Basic protection is provided by keeping the concentration of solvent vapors in the general atmosphere of the workroom below "the maximum allowable concentration (M.A.C.) for continuous exposure."

This limit, which represents the maximum concentration of solvent vapor to which workers may be continuously exposed during the eight-hour work day, has been established by the American Standards Association for several of the commonly used solvents, but many states have standards of their own. The limits vary from 50 parts of solvent vapor per million parts of air for benzene to 1,000 parts per million for petroleum products unmixed with more toxic substances. Solvent users can obtain M.A.C. tables from the Industrial Hygiene departments of their respective states, or, in states without such departments, from the U. S. Public Health Service, Washington, D. C.

Natural ventilation may suffice to provide this basic protection where the contamination of the atmosphere is slight, as where the solvent is being used in small quantities or is applied in equipment that prevents the escape of vapor. In other cases, it may be necessary to employ some form of mechanical ventilation, such as a local system which will draw off the vapors as they arise or strong general ventilation which will rapidly dilute the vapors to a safe level, as advised by a ventilating engineer.

Working conditions in a plant are probably satisfactory if the air is free from the pronounced odor of the solvent being used; but, since odor is not an adequate criterion, an atmospheric survey should be made. This requires the services of a competent chemist. In some states, such work is done by the State Industrial Hygiene Department on request.



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Available in Sizes Up to 390 Sq. Ft.
of Filtration Area

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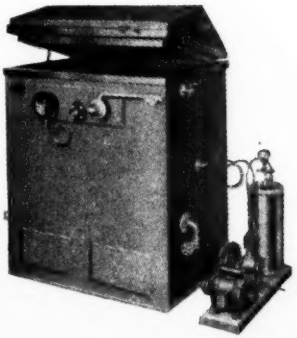
Industrial Plating Solution Filters are now coming equipped with AIRWASH — the new cleaning device that does a thorough job in a few minutes without opening the filter. You will welcome this new labor saving method of cleaning filters. The Industrial AIRWASH Device does a complete job of removing cake and sludge from filter cloths. There is no loss of time before starting the new filter cycle. Industrial Filters are furnished in sizes and models to fit your needs. Ask for our recommendations on the proper equipment to do your job better.



SALT FOG
Corrosion Test Equipment

This modern instrument is designed to meet all requirements of latest "Salt Fog Testing Procedure Specifications" to determine corrosion resistance of plated, coated, lacquered or painted parts.

Serious rejection losses on industrial finishes which must meet Army or Navy specifications are avoided by systematic tests with Industrial Salt Fog Test Equipment.

STANDARD SIZES

No. 1—48" long	26" wide	36" deep	No. 3—30" long	18" wide	30" deep
No. 2—36" long	24" wide	30" deep	No. 4—24" long	15" wide	30" deep
			No. 6—14" long	12" wide	12" deep

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However, even where the workers as a group are effectively protected by these measures, certain individuals may be endangered by practices like the following: (1) using solvents in poorly ventilated areas, such as small rooms, basements, pits and so on; (2) applying solvents in close proximity to the face, as in spotting garments or cleaning floors or machinery; (3) working over open containers of solvents; (4) handling products damp with solvents; (5) opening containers or equipment holding solvents in such a manner that high concentrations of the vapor are inhaled; (6) permitting drafts to blow solvent vapors in the direction of workers; (7) allowing persons to work with solvents to which they are abnormally sensitive; and (8) entering tanks containing solvent vapors without proper respiratory protection.

It is not enough to prohibit such practices. Workers must also be educated to the dangers involved, and constant supervision must be maintained to prevent anyone from taking chances.

When workers are unavoidably subjected to excessive cencentrations of solvent vapors, they should be protected with suitable gas masks. Where the vapor concentrations are relatively low, canister-type masks approved for organic vapors by the U. S. Bureau of Mines may afford adequate protection; but, for high concentrations, as in vapor-filled tanks, approved air-line respirators must be employed.

(Courtesy Safety Research Institute, Inc., New York, N. Y.)

Anti-Rust Compositions

RUST preventing and rust inhibiting compostitions which also possess lubricating qualities are set forth in U. S. Patent 2,366,486. These glycerine - containing compositions, which may be painted, sprayed, or otherwise applied, are designed to protect iron or steel pipes and fixtures that are subject to moisture or dampness from rusting for an indefinite period of time. These compounds are also said to be useful in preventing bolts and nuts from corroding, thus facilitating their removal when desired. In addition, such compositions are said to be useful in painting gasoline motors in salt-water vessels to keep them from rusting.

A major claim for the anti-rust compositions is that they may be used on vehicle rims to prevent the rubber tires from sticking to the metal surfaces, thereby not only facilitating tire removal but also preventing mutilation of the tire casing during its removal. A product specifically designed for this latter purpose, but typical of the other anti-rust compounds described, consists of:

Graphite	2½	ounces
Glycerine	2	ounces
Alcohol	1	ounce
Manganese resinate	7	grams
Liquid japan	220	grams

"Coated Abrasives." A handbook covering the entire subject of coated abrasives is now being offered by the Clover Manufacturing Co., Norwalk, Conn. Written by an expert, the subject is treated in a frank, impartial manner, dealing only with facts applying to the entire industry. The handbook includes information regarding abrasives in use, the backings employed, the various coatings and their uses, and the many commercial items available.

Copy of "Coated Abrasives" is available free to executives addressing requests on their company letterheads.

* * *

BUY A WAR BOND TODAY

Ransohoff Equipment for the Surface Treatment of Metals

First of All . . . THE SURFACE MUST BE THOROUGHLY CLEANED

This Ransohoff machine with its cost-saving adaptability THOROUGHLY CLEANS metal surfaces as a pre-process or inter-process operation. It eliminates messy floors, improving working conditions; cleans at automatically controlled cycles and omits unnecessary handling; for use on a great variety of parts.

Carriers of the work may be (1) baskets for enamel ware (2) hairpin hooks for wire coils (3) chains with clamps or hooks for sheets or steel sash (4) flat platforms for baskets of forgings.

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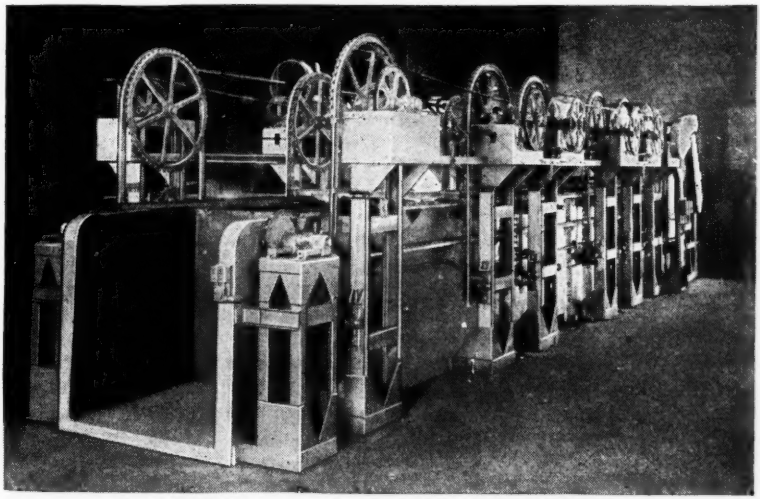
RINSE
. . .
PICKLE
and other cycles prior to enameling
. . .
CLEAN AND PHOSPHATE-COAT
before spray painting.



N. Ransohoff, Inc.

1311 Township Avenue **Cincinnati 16, Ohio**

Rust Preventives in

By D. W. PRICHARD

Quaker Chemical Products Corp.

DURING the past three years, usage of corrosion preventives to eliminate rusting of parts during the manufacturing process has become more and more widespread. In fact, in certain plants, such as those manufacturing aircraft engines, ball and roller bearings, and so on, inter-operational "slushing" is now specified as frequently in the production sequence as is a turning or grinding operation.

There have been many factors which have brought about this widespread adoption of intra-plant rust preventive measures: the insistence of Army, Navy, Lend-Lease Procurement and Inspection Agencies that all war materials be completely safeguarded during and subsequent to manufacture; the realization by manufacturers that rust is preventable and that rust prevention operations are a direct means to increase production and reduce scrap; and the generally "tightened up" requirements surrounding production of materials for war.

There are a great many points in the production cycle where materials in process are left in a condition most favorable to the development of rust and corrosion. The most dangerous of all these points are places where the metal surface of the part is left "chemically clean" and devoid of any protective oil film. Such is the condition of parts after being subjected to a vapor degreasing or alkali cleaning operation. It is most important that parts be slushed as promptly as possible after cleaning operations of this sort and it is absolutely essential that this corrosion proofing be done **before** parts are manually handled if complete protection against finger staining is to be obtained.

In passing, it has always been the author's contention that control of finger staining should be obtained by ensuring against manual handling of unslushed parts rather than by attempting to neutralize or halt the development of fingerprints into rust marks. There are very few corrosion preventive materials which, applied over a fingerprinted surface, will prevent transformation of underlying prints into rust. In addition, some chemical compounds having the power to "neutralize" acid constituents in fingerprints may also exhibit a tarnishing action on highly polished aluminum or lead-alloy surfaces.

Other places in production sequences where corrosion is most apt to develop are: (1) after grinding or machining with water soluble coolants, (2) after machining, tapping or threading operations with bases of the sulfur-chlor type having a definite staining action upon steel alloys, and (3) after tumbling parts with granite chips in an aqueous alkaline solution for the purpose of "breaking" sharp corners or removing heat-treating or quenching scales. Where slushing of parts wet with water droplets or droplets of soluble cutting

oils or grinding coolants is concerned, care must be taken that the corrosion preventive possesses adequate power to displace these water droplets and thoroughly wet-out the metal surface.

Selection of a suitable corrosion preventive for intra-plant use must be made from a common sense approach. While laboratory control of corrosion preventives is desirable and to be recommended, evaluation of the compounds available should not be made solely by checking resistance of the compound to salt spray, 100 per cent humidity atmospheres at elevated temperatures, and so on, but should be governed primarily by tests simulating plant conditions, or better still, by actual treatment of ear-marked stocks of parts which are subsequently followed and observed through production sequences.

There are many reasons for basing the selection of the intra-plant rust preventive on actual usage tests rather than on laboratory cabinet tests, since many other factors besides salt spray and humidity resistance affect the satisfactory use of the slushing material. These are discussed below.

Among the fundamental requirements of the corrosion preventive for intra-plant use are:

1. That the product or its vapors be not harmful or annoying physiologically in any way to personnel who must dip or spray parts.

2. That the material be easily and quickly applicable by simple dip, spray, or brushing methods. In passing, it may be stated that intra-plant slushing materials are usually of the "cold-applied" rather than "hot-dip" variety because of greater ease of application and removal and the lesser amount of care required to ensure complete and uniform coverage of parts.

3. That the resultant film be sufficiently plastic or soft enough to ensure against "chipping off" of film when parts bump against one another or against hard surfaces in handling, and to prevent sticking together of adjacent pieces in storage. The soft type of film also possesses the property of flowing back over and recoating surfaces on parts which may be

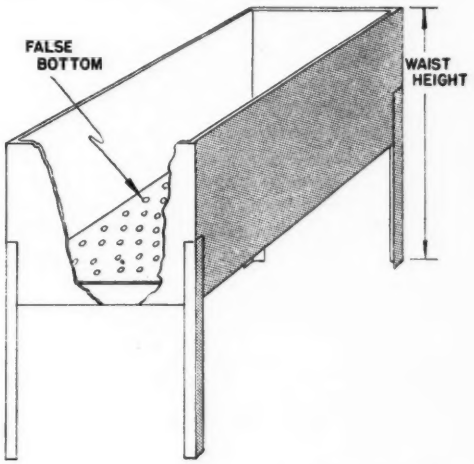


Fig. 1—Drawing showing general design of slushing tank for individual machine use

wiped partially free of compound in handling.

4. That the film be easily removable by alkali or solvent cleaning or by vapor degreasing as the case may require. In this connection, it may be stated that some products on the market yield a protective film which is soluble and readily removable over short periods of time but which oxidizes or undergoes chemical change over longer periods, becoming insoluble and very difficult to remove after protracted storage periods.

5. That the product be non-corrosive to non-ferrous surfaces, if such non-ferrous materials are being handled. Many ferrous parts, for instance, may have copper or lead-indium plated or babbitted surfaces. In other cases, the product may incorporate considerable magnesium alloy which must also be slushed to present "rusting" or formation of the whitish or gray magnesium oxide. Not everyone is familiar with the fact that it is **not** standard practice to slush magnesium parts in process and storage.

6. That the film afford protection beyond the **maximum** possible length of time **between** operations or, in intra-plant storage, through the **hottest** and **most humid** seasons of the year.

There are many methods for application of corrosion preventives to parts in process. The most suitable method can only be determined by a careful survey of individual plant requirements. Obviously, production volume, length of time of protection required, size and shape of pieces to be handled, and the nature of preceding and succeeding operations will all have a bearing on the manner in which the corrosion preventive is best applied. In general, the essential point to remember is that the part should be slushed as soon as possible after the finished or semi-finished surface has been generated and before the part is manually handled to any extent.

One of the simplest yet most effective of slushing methods calls for the placement of an individual slushing tank of small size at the side of each machine operator, or for the use of a single tank centered between and serving a battery of four or six machines. In almost every case, the part in process must be re-

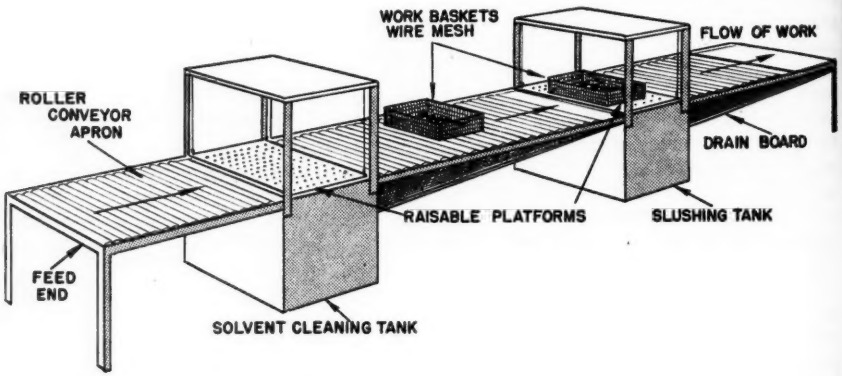


Fig. 2—Typical mechanized slushing system utilizing simple roller conveyor apron on which large parts to be slushed are placed individually, small parts in wire mesh baskets

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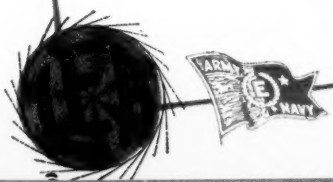

moved manually from the chuck of the machine. While handling it thus, it is a simple matter to dip the part into a slushing tank for the **combined** purpose of removing the cutting or grinding coolant and applying a rust preventive coating. This method of slushing immediately upon removal of the piece from a lathe or grinder ensures prompt coverage with corrosion preventive, eliminates staining of work due to adhering soluble oil droplets or sulfur-chlor cutting oil residues, and combats the tendency to forget to slush parts, as is the case where parts are allowed to accumulate for periodic batch slushing.

Slushing tanks for individual machine use may be small in size, depending, of course, on the size of the pieces handled (see Fig. 1). The top of the tank should be waist high. It is important that the tank have a false bottom to keep parts free of the sludge, dirt, and chips which are bound to accumulate on the bottom of the tank. A sludge "blow-down" or removal valve should also be installed in the tank bottom for periodic drain off of the sludge layer. Presence of this valve, however, is not to be construed as a means of avoiding frequent and regular complete tank drainage, cleaning, and refilling with fresh rust preventive solution. Such periodic tank cleaning should be set up as an inviolable plant practice.

For large production volume shops where work is performed on an assembly-line basis, it has been found convenient to mechanize slushing operations (see Fig. 2). The work is placed on the feed end of a roller conveyor apron and pushed into an apron section which is suspended freely so as to permit lowering pneumatically or hydraulically into a tank

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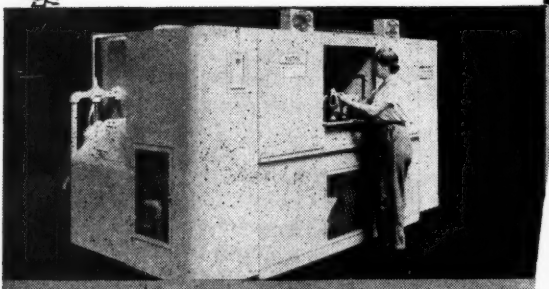

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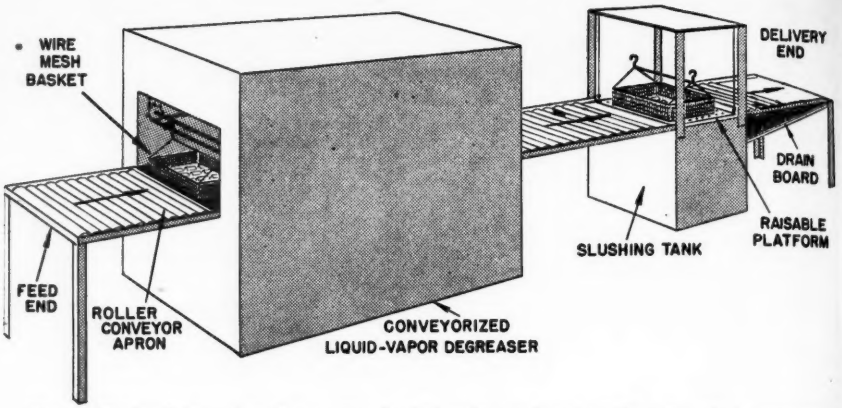

Fig. 3—Mechanized system for conveyorized cleaning and rustproofing of parts in process

containing a solvent for preliminary cleaning of the work of cutting oil residues and chips. The work is lowered into the solvent cleaning tank for a short period, removed, and passed across the conveyor apron to a second tank, also equipped with a conveyor section that can be lowered and raised, in which are contained the rustproofing materials. Drain boards pitched to allow for draniage of materials back into both the solvent and the rustproofing tank are provided underneath the roller conveyor apron. This type of conveyorized cleaning and slushing setup has been found very effective, and the use of the preclean solvent tank greatly extends the effective life of the solution in the rustproofing tank by reducing the rate of contamination of rust preventive with foreign material.

Another widely used method for conveyorized cleaning and rustproofing of parts in process comprises the vapor degreasing of parts followed by immersion in a rust preventive solution, utilizing the heat remaining in the parts following the degreasing operation to obtain rapid drying and setting of the rust preventive film (see Fig. 3). Still other cleaning and rustproofing installations involve the familiar types of industrial spray washing machines, one machine being used for cleaning parts by spray-washing with either solvent or solvent emulsions and a secondary machine being used for spray coating of parts with corrosion preventive solution. Ordinary industrial washing machines originally installed for use with alkali solutions for cleaning parts can be used without modification for spray application of most cold-applied rust preventive materials.

While most parts can be uniformly coated overall with rust preventive solution in mechanized or conveyorized slushing installations through proper racking or orientation upon a conveyor apron, the shapes of occasional pieces may render completely mechanical handling impractical. For instance, it may not be possible to uniformly coat remote interior surfaces in an automatic spray coating machine. In such cases, a high degree of slushing speed may still be maintained through the use of manually wielded spray guns.

Whenever installation of mechanized rust preventive application sys-

Short cuts that save time and money become available when you apply "SCOTCH" Masking Tape to your manufacturing problems. The versatility of "SCOTCH" Masking Tape goes far beyond the limitations of its name; masking is only part of the story.

Take the job pictured above, for instance, where "SCOTCH" Tape made it possible to hold many small pieces in position for spray painting. When the paint had dried, the pieces were easily removed, coming free without any adhering residue.

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tems are being considered, it is well to consult technically trained engineers of companies manufacturing the rust preventive materials to be used. These men, who will be charged with the responsibility for the effectiveness of rustproofing, must certainly be given the opportunity of recommending suitable application methods. Being familiar with many installations of various types in other plants and having no commercial interest in any one type of equipment, they are well qualified to make unbiased and sound recommendations.

Paint and Lacquer Adhesion to Aluminum

THE Technical Processes Division of Colonial Alloys Co., Philadelphia 29, Pa., announces that aluminum and its alloy can now be easily and quickly prepared for painting and lacquering with excellent adhesion and corrosion resistance qualities. The application of this surface preparation can be performed either in the shop as a hot immersion process or in the field as a cold spray, brush, or immersion.

The hot immersion method consists of dipping the work for from 3 to 30 minutes in a hot chemical solution, rinsing, and drying, after which it is ready for painting or lacquering. The cold spray, brush, or immersion method consists of applying a chemical solution (at room temperature) by spray, brush, or immersion, allowing from 15 seconds to 1 minute for setting and then rinsing the surface free of the applied solution. The work is then dried and is ready for painting or lacquering.

The hot immersion method is said to be better for increasing the corrosion resistance of the aluminum, however, the cold method is also said to enhance the corrosion resistance. The cold method is of special interest since it can be applied to aluminum already assembled in the field or "in place."

Production Plating Aided by Power Brushing

A REPORT received by The Osborn Manufacturing Co., Cleveland, Ohio, manufacturer of brushes for industry, explains how production plating methods are practiced at the Packard Motor Car Company, Detroit. A firm believer in the advantages of power brushing, not only in its plating department, but for removing burrs and polishing after machining operations, Packard saw the possibility of applying power brushing to spot plating in the production of rocker arms or levers.

In this spot plating operation, 20 rocker levers are racked at one time in a pan and covered with hot wax. The area on each lever which is to be plated is on the cam surface which happens to be on the upper side. After the 20 rocker levers are covered with wax and the wax is frozen, an Osborn "Ringlock" 1½-inch diameter 0.010 gauge wire brush with ⅜-inch hole and mounted on a flexible shaft is used to facilitate removal of the wax from the surface to be plated. In this manner, the speed of the mass plating process is increased, with the wax being readily removed withiin precisely controlled limits.

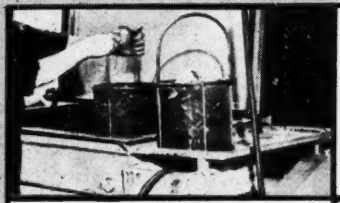
Penchlor Acid-Proof Cement. A booklet descriptive of an acid-proof cement for use in the construction of pickling and other tanks is now being offered by the Special Chemicals Division, Pennsylvania Salt Manufacturing Co., Dept. PF, 1000 Widener Bldg., Philadelphia 7, Pa. Copy of Booklet No. 6 free upon request.

Fit the Cleaner—and the Machine to Your Finishing Requirements!

When you use the right Magnus Cleaner suited to the metal or metals being cleaned, the nature and extent of dirt and the finishing operation involved, you can improve results still further by using the type of Magnus Cleaning Machine best adapted to your production set-up.

The Magnus Aja-Dip Cleaning Machine deserves investigation, because of its versatility and wide range of application, even where batch operations may not appear desirable at first thought, and its extra speedy cleaning results.

Let us show you how this machine speeds and improves cleaning by moving the work up and down many times a minute *in* the cleaning solution.

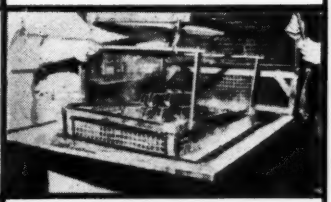


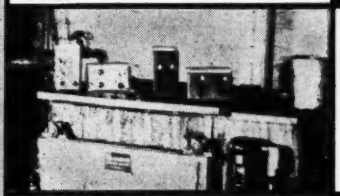
◀ BEFORE PLATING

For steel, Magnus 94XX. For brass, zinc, die cast and soft metals, the Magnus Electrex Cleaner suited to the metal or metals and the dirt involved.

AFTER STAMPING ▶

For most lubricants on all metals but aluminum and zinc, Magnus 94XX. For the latter, Magnus 92-S. For polished and machined aluminum, Magnus 91-S.



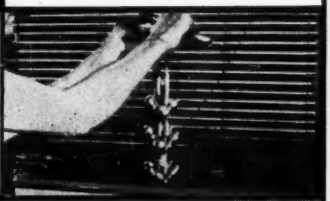


◀ AFTER OIL QUENCHING

For the removal of carbonized deposits, Magnus 24-S, which combines adequate alkalinity with the cleansing and rinsing properties of soap.

AFTER BUFFING ▶

For precleaning before electroplating and for final cleaning where a physically clean surface is adequate, Magnusol in the Emulso-Dip or Emulso-Spray Process.



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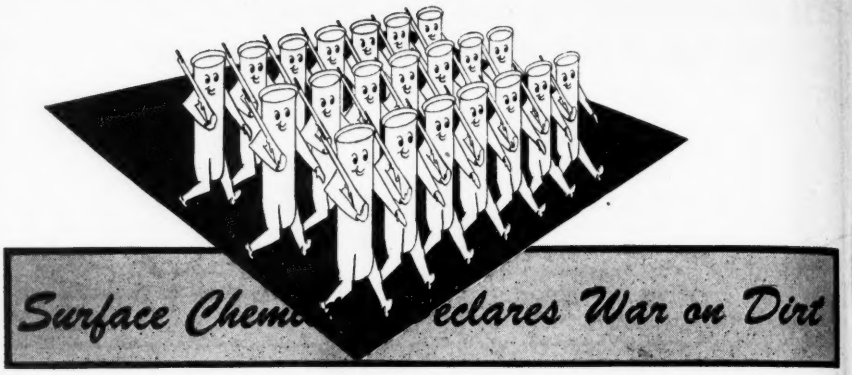

Surface Chem[illegible]eclares War on Dirt

By RAY SANDERS
Vice President and General Manager
Turco Products, Incorporated

THE effective preparation of the metal surface for plating has always been a problem to electroplaters. During the past five years, the pressure of war has brought so much new research and experience to bear on the solution of this problem, that a review of what has been learned should be helpful to electroplaters in charting the paths ahead.

Cleaning plays so vital a part in plating because of one of the peculariities of the electric current; namely is tendency to flow over the surface of an object. In order that the entire surface may be plated, it is necessary that the electric current pass through every portion of the surface as it makes contact with the plating solution. When the surface is coated with matter which resists the flow of electrical current (such as grease, oil, and dirt) or with foreign particles whose resistance is greater than the surface being plated, successful plating cannot take place. For this reason it is necessary to remove grease, oil, dirt, metal chips, rust, scale, and other contaminating matter in order that a smooth tightly adherent, unbroken plating job be obtained.

The electroplater cleans in order to obtain a uniform, equally distributed flow of electric current over the work which he wishes to plate. Experience and research have established that there is no one cleaning method or material which will satisfy this requirement under all conditions. A cleaning method is uniformly effective only if it is tailored to remove a particular kind of dirt from a particular kind of metal, under a given set of conditions. These conditions include the quality of plating which is required, the time and the equipment available for cleaning, and the amount of manpower which can be utilized. Never to be overlooked is the nature of the water used in making up both the cleaning and plating solutions, since this may have a profound influence on both operations.

The attack on one of the plater's chief enemies, dirt, has led to the development of a new science, Surface Chemistry. Like every other science, Surface Chemistry is based on certain fundamental principles. It is based first of all on a knowledge of

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dirt, its composition and its behavior. Secondly, it is based on a knowledge and mobilization of chemical and physical factors which must be brought into play to get rid of dirt. A knowledge of these factors should prove to be of great value to platers by providing them with standards which will help them in their selection of a cleaning compound.

Wetting Action

Oil is what makes dirt stick. Practically all dirt is surrounded by an adhesive, oily film. To get rid of dirt, the grip between the oil and the surface must be broken. The first step is to get the dirt wet, but as we all know, water will refuse to wet an oily surface. However, scientists have learned how to make water wetter. Certain chemicals can be added to water which not only enable it to spread out over an oily surface but to get down under the oil so that the oil is separated from the surface by a thin film of cleaning solution. Rapid, thorough wetting makes it possible for the cleaning solution to come to grips with dirt.

Emulsifying Action

Wetting action weakens the bond between oil and surface, but it unable to dislodge an oily mass. After wetting takes place, emulsifying action comes into play. Emulsifying agents have the ability to break up continuous layers of oil into small globules and to scatter and suspend these droplets through the cleaning solution so that they cannot be redeposited. The combined effect of wetting and emulsifying actions is the loosening, breaking up, and dispersing of oily films.

Saponifying Action

We all know that oil is not soluble in water. However, through chemical action, certain oily constituents of dirt can be made soluble in water. These substances are known as fatty acids and are present in most animal and vegetable oils. Certain alkalis have the ability to combine chemically with these fatty acids to form soap and glycerine and, as we all know, these are soluble in water. You cannot see the soap formed in this manner, but it is there —and a remarkable thing happens. The dissolved soap (remember that it was originally part of the dirt) increases the emulsifying and wetting power of the cleaning solution. Thus, the removal of that part of the dirt which cannot be saponified (changed into soap) is greatly speeded. A portion of the dirt is made to turn against itself and to help in its own removal.

Colloidal Action

Dirt is a miscellany of solid particles of various types held in position by an oily film. Emulsifying and saponifying actions help in the removal of grease and oil, but all scientifically formulated cleaners provide for the breaking up and dispersion of solid particles as well. This is accomplished through colloidal action. Cleaning agents can be formulated which have the ability to break up a solid mass into small particles and to scatter them through the cleaning solution so that they will not settle out. Carbon, clay, road film, dust, food particles, and paint are among the forms of dirt removed with the help of colloidal action.

Solvent Action

When a solid, such as table salt, dissolves in water it is broken down into particles so small that they are invisible, even under the electron microscope. These particles are uniformly distributed throughout the water. They show no tendency to settle with standing, and they cannot be filtered out.

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18 MURRAY STREET, NEW YORK 7, N. Y.

Water itself can remove very few types of dirt through direct solvent action, since water has no tendency to dissolve oils, fats, resins, tar, rubber, plastics, and many other substances which represent the most troublesome types of dirt. However, science has developed remarkable solvents and mixtures of solvents which are capable of cleaning parts which would have been discarded as hopelessly fouled only a few years ago. Hard baked carbon, baked enamel, tough engine varnish and very heavy greases yield almost magically to these scientific solvents, which have the further advantage of being almost neutral chemically so that they offer an avenue for the safe cleaning of easily corroded metals, such as aluminum, magnesium, copper, zinc, and others.

pH and Cleaning

pH is a yardstick for measuring the degree of alkalinity or acidity of water solutions. It is a measure of the energy, but not of the amount of alkali or acid in the solution. pH alone does not clean, since the cleaning ability of a compound is not to be measured by its alkaline or acid strength.

Two solutions may register identical pH values on the most sensitive instruments known, yet one will corrode aluminum, one will not; one will remove paint and primer swiftly and completely, one will leave them unaffected; one will maintain its efficiency for weeks or months, one only for hours or minutes.

pH is valuable in supplying comparative information about the action of a particular cleaner under a fixed set of conditions, and in establishing general values in which certain types of cleaning can be expected to take place. It takes its place as one among a number of fac-

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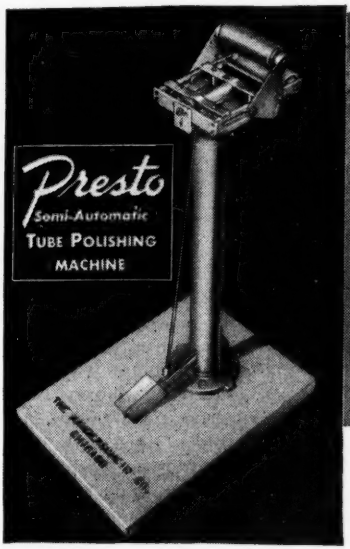
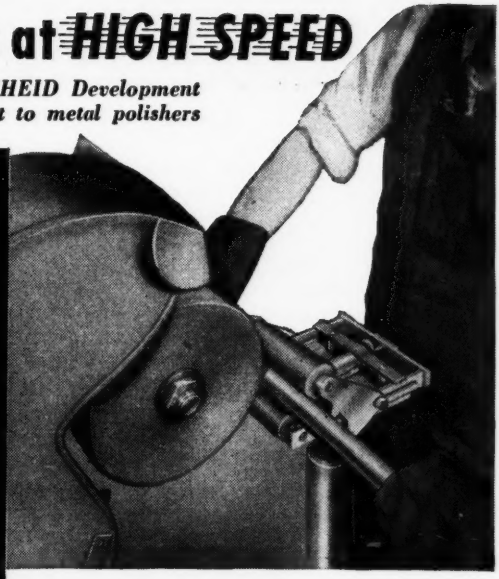
Another MANDERSCHEID Development of incalculable benefit to metal polishers





The rubber rollers hold the tube against the polishing wheel with *uniform* pressure. As the tube rotates, it *automatically* feeds slowly across the polishing wheel. The *rate of feed* is *easily and accurately adjustable to suit the job.*

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Presto Polishing Machines are *completely* portable and *adjustable* for use with any polishing lathe. You merely push the machine up to the wheel—adjust for height and to fit the tube—insert the tube—and you are ready to do a marvelously *uniform* polishing job *at high speed.* Total set-up time is *less than five minutes.*

What's more, when the tube polishing job is finished, the polishing lathe *is not tied up.* You merely set the Presto Polishing Machine aside, ready for use with any lathe in your plant when you need it.

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tors which must be considered in-formulating a scientific cleaning compound.

Buffer Index

A carefully formulated alkaline or acid cleaner is buffered so that its cleaning energy will not be rapidly exhausted by the dirt which it removes. As the energy of acidity or alkalinity is used up in cleaning, a fresh supply is liberated to sustain the cleaning efficiency of the solution. The long life of the cleaning solution, the amount of maintenance it requires to keep it up to par, and the uniformity of the results it produces are largely dependent on buffering.

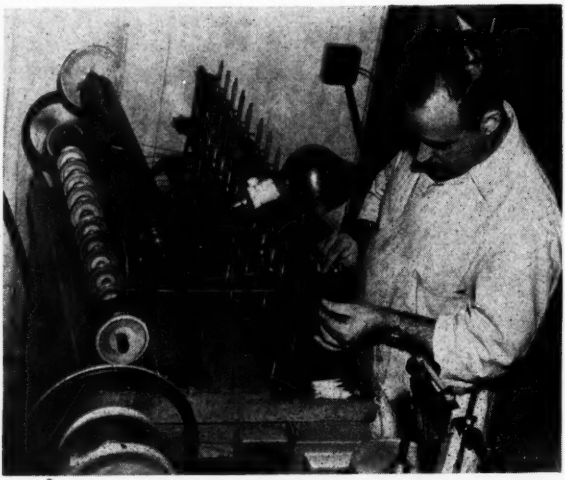
Total Alkalinity or Acidity

In the selection of a cleaning material, the criterion of value is not the amount of acid or alkali by weight or volume which is offered, but the extent to which these substances play an active part in the removal of dirt. If a considerable part of the alkali or acid in a cleaning compound fails to yield active cleaning energy, it represents so much inert matter or filler. In the formula of a scientifically balanced cleaner, a definite function is assigned to each component; there is a definite reason for the inclusion of each ingredient. The elements in the formula will not merely fulfill their own functions, but will mutually support and reinforce each other so that the whole will be more active and more stable in cleaning than any of the parts.

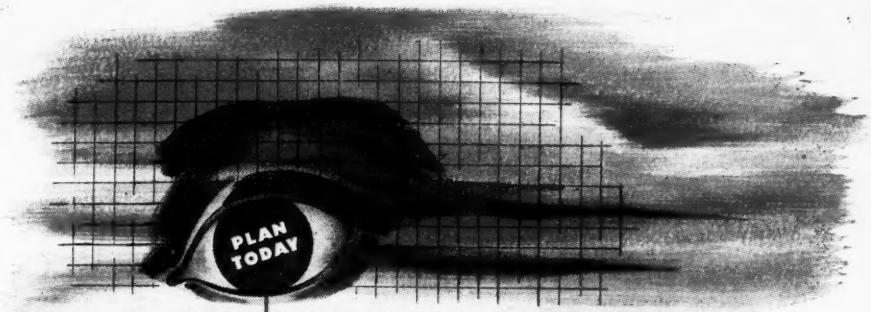
Water Conditioning

Hard water is an ever-present problem in cleaning and other industrial operations. Hard water is responsible for film on glasses and dishes; hard water film can ruin plating jobs; hard water is responsible for scale in boilers and cooling systems.

Modern cleaning agents are formulated to condition hard water and to control the minerals responsible for water hardness so that they cannot leave the solution, interfere with



THOMAS ROSSI supervises the operation of this ten-unit diamond-die polishing machine at the Dobbs Ferry, New York plant of North American Phillips Co., Inc. Each die is rotated while a fine needle, inserted in the die and charged with diamond dust, oscillates from side to side. This action imparts a high polish to the die which is so essential for the production of smooth, round wires of small diameter—some as small as 0.0008 inch. Large quantities of this wire are used in the production of wartime electronic equipment.



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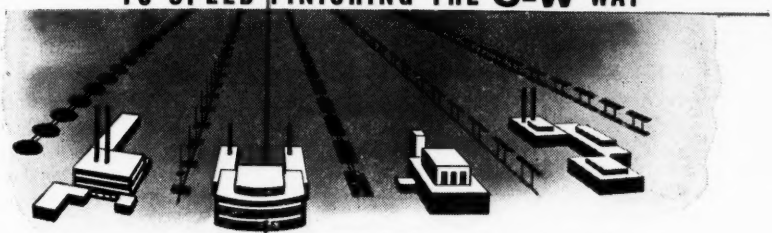
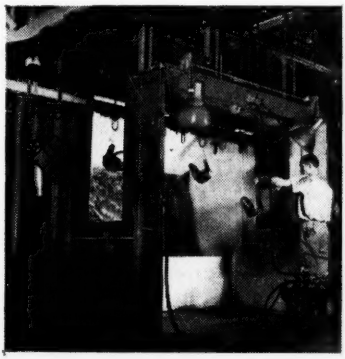


Look Ahead with Infra-Red



For your post-war baking and drying operations, plan to equip your plant to finish more products . . . in less time . . . in less space . . . with less labor . . . at lower cost. Such plans should consider "the G-W Way" of co-ordinating conveying with an infra-red baking and drying unit.

In infra-red convection heating the conveying equipment is a most vital factor in contributing to smooth-running, profitable operations. Conveyors must be planned to move work through the successive stages of spraying or dipping —baking—drying—cooling—packaging and shipping . . . in the manner that will process parts most effectively *while in transit.*

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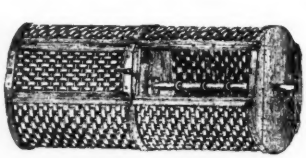
the cleaning action, or form scale and film deposits. Chemistry has developed remarkable materials for the treatment of industrial water supplies, which not only prevent scale from forming but remove existing scale.

Any cleaning material used with water should be formulated so that it can be used successfully and economically in the hardest water.

Not the Whole Story

We have been able to present only the highlights of the principles of Surface Chemistry as applied to platers' cleaners. The practical application of these principles has already resulted in spectacular savings in time, in labor, in money and, equally important, in the conservation of irreplaceable equipment. Yet this is only a beginning. Researches now under way point to further developments which will even further simplify the maintenance of automotive equipment. Surface Chemistry is a new and expanding field in which science operates in the service of the automotive industry.



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THE importance of the alkyd resins is emphasized in a report by H. J. Lanson, D. Habib, and P. E. Spoerri (Ind. & Eng. Chem. 37:179, 1945) on the potential value of milkweed seed oil in protective coatings. Seeds of the common milkweed, obtained as by-products in the production of milkweed floss, contain about 22 per cent of a semi-drying fluid which can be refined to a very pale color.

In view of the widespread use of oil-modified alkyd resins in specification finishes for military purposes and the probability that these resins will be used to an increasing extent after the war in protective coatings, the above workers investigated the use of the new oil as the modifying oil in these glyceryl phthalate condensations. Several long-oil and medium-oil length alkyds were prepared from milkweed seed oil and were compared with the corresponding alkyds made with soybean oil in both pigmented and unpigmented coatings. It was found that the milkweed seed oil alkyds possess superior color retention and flexibility, although they are slightly slower in drying than the corresponding soybean oil alkyds.

"Selenium vs. Tube Rectifiers" is the title of a four-page informative leaflet issued by the Green Electric Co., 130 Cedar St., New York, N. Y. Copy free upon request.

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Spectrophotometer--Analytical Tool Extraordinary

By BRYANT W. POCOCK

WITHIN recent years an optical instrument has come to the fore which not only has immeasurably simplified countless chemical analyses, but which bids fair to revolutionize routine laboratory procedure. This instrument, the spectrophotometer, possesses untold implications for the metal finisher.

Already, industrial control laboratories have set up flow sheets of methods embodying the use of the new instrument for determining percentages of manganese, molybdenum, chromium and vanadium in steel; iron in bronze; and copper, iron, manganese, chromium, magnesium and titanium in aluminum alloys. The optical methods are not only said to be more accurate than older methods, but are so swift that they border on legerdemain. Consequently, there should be no reason why they cannot be used in the control of electroplating solutions or in the analysis of paints, rust preventatives or other organic or inorganic liquids.

The spectrophotometer operates on the principle that if you shoot a beam of light through a liquid, the amount of light that gets through it will be proportional to the amount of material the liquid has dissolved in it that tends to hold the light back.

It has been found that a large number of organic compounds possess the unique characteristic of forming colors when added to solutions of certain substances. Other substances are themselves colored when in solution. For example, zinc dissolved in acid is practically water clear and colorless. Nearly as much light will go through such a solution as will pass through distilled water. If, however, the solution is made slightly alkaline and the substance dithizone is added, zinc dithizonate will be formed, which on extraction with carbon tetrachloride produces a bright red color. Copper and nickel in solution have their own characteristic colors. Lead, again, is to all purposes colorless when dissolved. So is tin.

Chromium when completely oxidized to the hexavalent state produces a reddish-violet color with diphenylcarbazide. It is a relatively simple thing to have an excess of diphenylcarbazide present, in which case the intensity of the color is in direct ratio as the quantity of chromuim present. You measure the intensity, and

you know how much chromium you have. This is one of the most sensitive reactions known, the most minute traces of chromium being susceptible of precise determination.

In order to measure the intensity of the color, however, there are certain things which one should keep in mind. A transparent solution that looks reddish-violet does so because reddish violet is the color it allows through most readily. It holds back all the rest of the colors of which white light is composed, some more completely than others. There is always one color, however, which is repressed more forcefully than all the others, and that color is the one which is characteristic of the reddish-violet solution in question. The same principle applies in cases of other colored solutions resulting from other chemical reactions.

The spectrophotometer not only enables one to identify the color which is held back most completely; it will also measure the degree to which it is held back, thus automatically measuring the amount of active material (chromium, for example) present. Let us see why.

A small amount of the solution to be tested is made up and placed in the absorption cell of the spectrophotometer. The machine is turned on and a beam of light is passed through the solution, to fall upon the surface of a delicate photoelectric cell which measures its intensity. (Strictly speaking, the photoelectric cell generates an electric current which actuates a galvanometer. It is the meter reading which is used to measure the light intensity.) The wave length of this beam of light may be altered at will simply by turning a crank. The crank is turned until the wave length is 400 m_μ, the region of violet light. The comparison absorption cell containing distilled water is slid into position intercepting the beam, and the galvanometer adjusted to read 100. The cell containing the test solution is now substituted for the comparison cell, and the reading of the galvanometer recorded. The crank is turned to 410 m_μ and these steps repeated. This is done at increments of 10 m_μ up to a wave length of 750 m_μ, the region of red light.

If the galvanometer is carefully adjusted to read 100 with distilled wa-

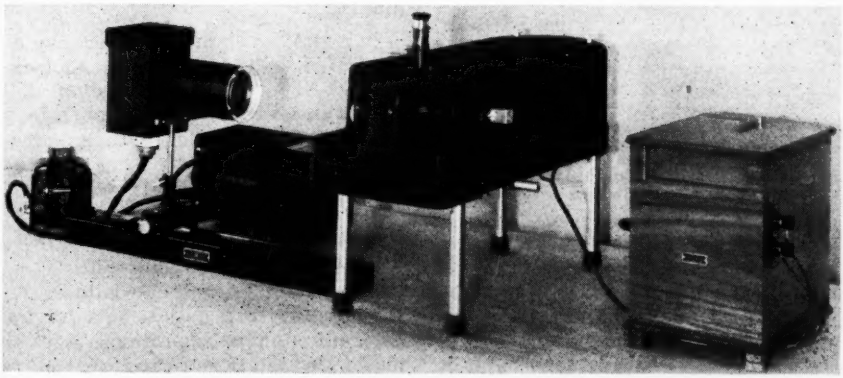


Fig. 1—Typical Spectrophotometer
(Courtesy Central Scientific Co., 1700 Irving Park Rd., Chicago, Ill.)

ter at each wave length, the reading with the test solution may be called the per cent transmittancy of the solution at that wave length. If these values of per cent transmittancy are plotted against wave length, a transmission curve is obtained, such as is shown in Fig. 3. It requires only a glance at such a curve to see that the wave length of minimum transmittancy (maximum absorption) occurs at 540 m_μ. This means that light of this wave length is affected most in passing through our test solution, so this wave length is obviously the one to choose in order to secure the greatest sensitivity in our procedure. This need be done only once and is good for all time.

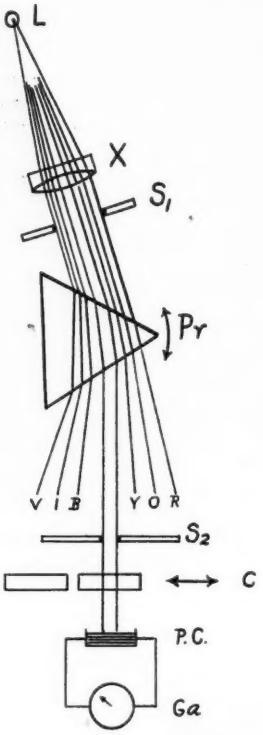


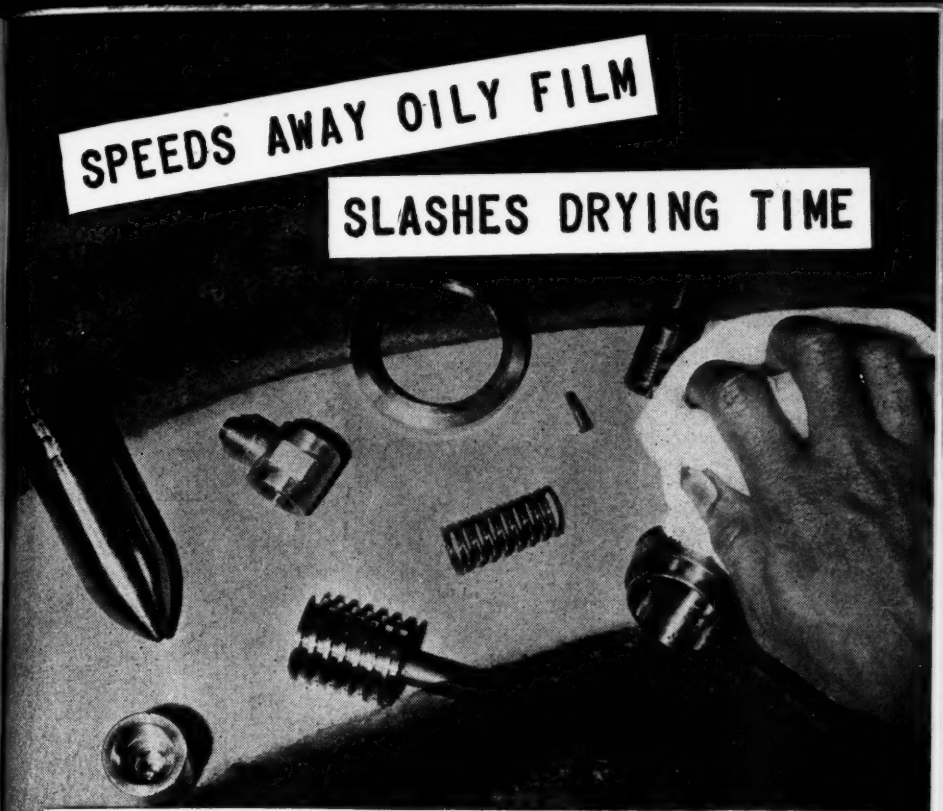
Fig. 2—Optical System of Spectrophotometer. L=Light Source; X=Condensing Lens; S_1=Entrance Slit; S_2=Exit Slit; Pr=Prism or Grating; C=Absorption Cells; P.C.=Photoelectric Cell; Ga=Galvanometer

Selecting 540 m_μ then, as our operating wave length, our next step is to construct a concentration curve. In order to do this, we make up a series of half a dozen test solutions containing different known amounts of chromium. We obtain and record the transmittancy of each solution at 540 m_μ and plot these values against corresponding amounts of chromium. If plotting is done on semilog paper a straight line should result, as in Fig. 4. This also need be done only once, and is good for all time provided conditions of procedure are not altered.

How can we use the concentration curve? All we need do is take a sample of solution containing an unknown quantity of chromium, treat it to produce a color with diphenylcarbazide, place it in the absorption cell of the spectrophotometer at 540 m_μ, adjust the galvanometer to read 100 with distilled water, read it again with the test solution, and look up the amount of chromium present directly from the concentration curve. The entire procedure can be done in a matter of minutes.

In a similar manner, copper may be estimated as the copper-ammonia complex at 620 m_μ, or with sodium diethyldithiocarbamate at 430 m_μ. Nickel may be determined with bromine-dimethylglyoxime at 530 m_μ and zinc at the same wave length with dithizone. Silver may be determined at this wave length with p-diethylaminobenzylidinerhodanine.

Space will permit of detailed instructions in this article only for the determination of chormium. A sample of the solution to be tested is reduced to dryness with perchloric acid, dissolved in water and made to 50 ml.



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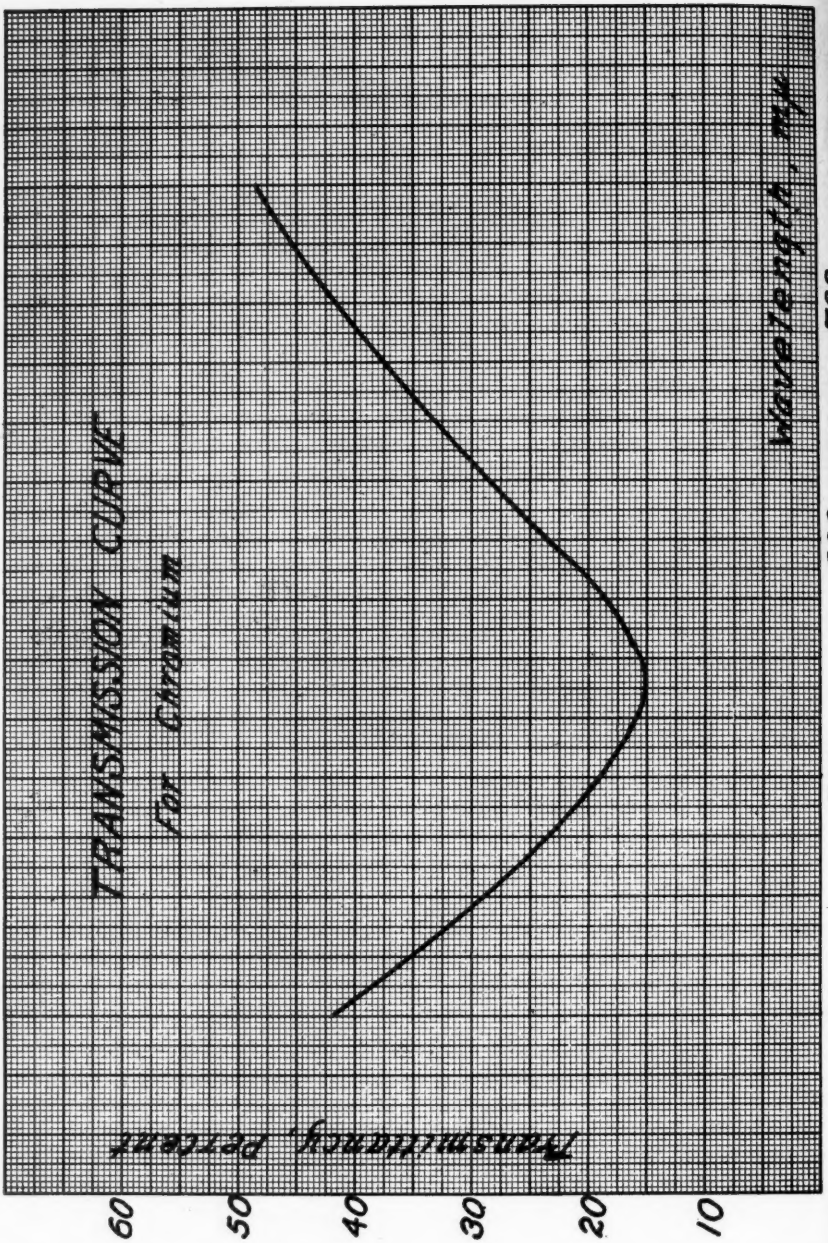

Fig. 3—Graph showing transmission curve obtained when spectral transmittancy values of test solution are plotted against wave length

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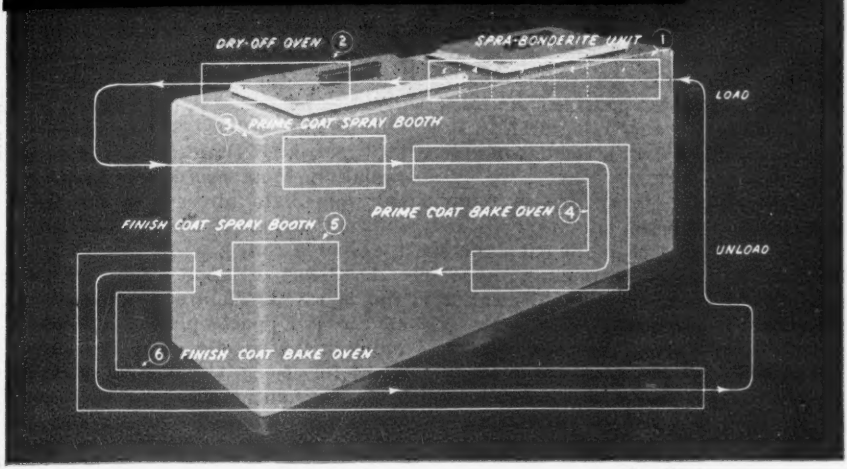

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Fig. 3—Graph showing transmission curve obtained when [illegible] ant transmittancy values of test solution are plotted against wave lengths

in a volumetric flask. A 2-ml. aliquot is diluted to about 25 ml., 2 ml. concentrated HCl added, 1 ml. reagent added, and the solution diluted to 50 ml. The reagent consists of 0.2500 gm. diphenylcarbazide in glacial acetic acid to 100 ml. Readings taken from Fig. 4 will give the amount of chromium in per cent of the solids in the original sample provided the total solids content was 50 mgm. Adjustments should be made for departures from this amount.

It is common procedure in many laboratories to make simultaneous estimations of two or more substances present in test solutions, provided these substances exhibit absorption maxima at wave lengths sufficiently apart to prevent serious overlapping. When several substances are to be estimated in the same test solution, it is common practice to start with a single sample and take volumetric aliquots, treating each aliquot as necessary to produce a color characteristic of the element which it is allowed to represent.

The inordinate versatility of the spectrophotometer is further attested by the fact that its operation is by no means limited to light of visible wave lengths. Actually, certain applications dealing primarily with organic liquids require its use in the ultra-violet spectrum. Others require infra-red radiation. Most procedures of practical immediate interest to the metal finisher, however, are carried out in the visible range.

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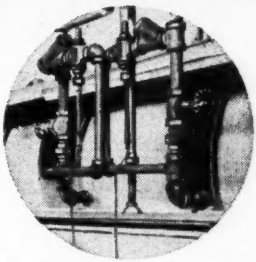

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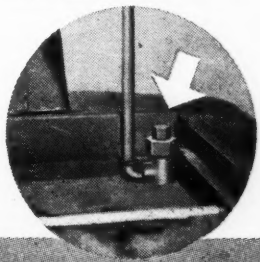

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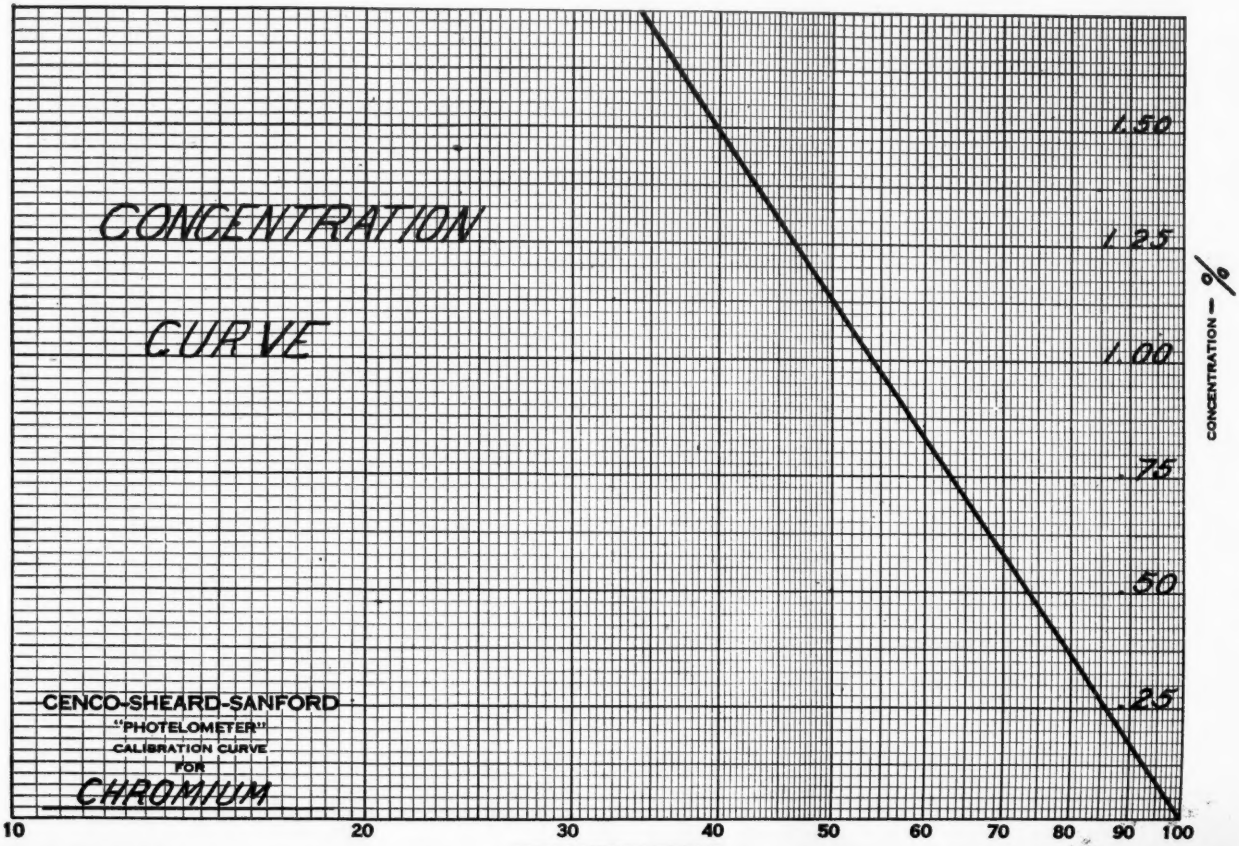

Fig. 4—Graph showing concentration curve obtained in recording the transmittancy of test solutions at 540 mμ and plotting these values against corresponding amounts of chromium

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Fig. 4—Graph showing concentration curve obtained in recording the transmittancy of test solutions at 540 mμ and plotting these values

ing materials would bear greater consideration than has heretofore been shown.

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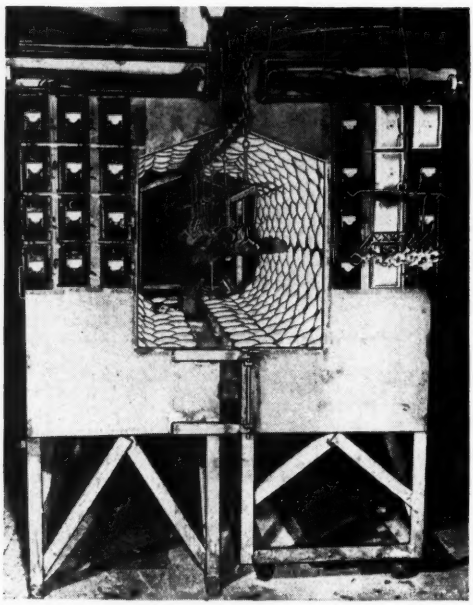
Leiman Grinding and Polishing Dust Collectors. A four-page bulletin published by Leiman Bros., Inc., 168 Christie St., Newark 5, N. J., illustrates and describes a line of grinding and polishing dust collectors for jewelry, dental, novelty and light metal work. Copy of Bulletin No. 31645 free upon request.

"Plasto-Pak." Technical Bulletin 5P on "Plasto-Pak" — a cold dip strip coating which is designed to prevent corrosion, tarnishing or scratching of metals during production, assembly, shipping, or storage—is now available free from the Standard Varnish Works, 2600 Richmond Terrace, Staten Island, New York.

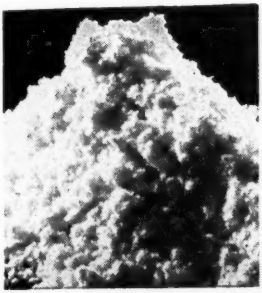
"Your Sanding Dollar Goes 25 Per Cent Farther with Durabonded" is the title of a four-page folder released by the Behr-Manning Corp., Troy, N. Y., illustrating and describing "Durabonded" coated abrasives and their application in deburring, sanding, grinding, and other finishing operations. Copy free upon request.



THIS infra-red drying installation at the East Springfield works of Westinghouse Electric Corporation has several unusual features that make it extremely versatile. With the installation, the work passing through the drying area need not be revolved since the lamps are so positioned that there are no "blind" spots. The installation incorporates a total of 450 250-watt lamps having a combined wattage of 112.5 kw. Included are ten panels of 45 lamps which are divided 15 to a row, with one switch for eight bulbs and another for seven bulbs. The banks are connected vertically. Thus, when small work is being dried and all of the bulbs are not needed, some can be cut out to reduce the cost of the operation. Parts dried in the oven range from a fabricated case weighing 65 lb. to all types of small miscellaneous formed pieces.

The frame is made in two parts, one of which is equipped with casters so that after unhooking from the other part, it can be rolled back to allow lamp replacements or repairs to be made. This construction also permits the distance from the lamps to the work to be adjusted with ease.

"We found a simple solution by surfacing with



FLOCK"

FUNCTIONAL

Used in airplane, auto and numerous other industries for—

SOUND DEADENING • TEMPERATURE INSULATION • INTEGRAL GASKETS • SHOCK ABSORBING SURFACE • NON-MAR SURFACE PROTECTION.

DECORATIVE

Applied in various lengths and colors to wood, paper, cloth, metal, etc., the following effects are produced—

SUEDE LEATHER • FURNITURE UPHOLSTERY FABRICS • AIRPLANE AND AUTO UPHOLSTERY FABRICS • VELVET • VELOUR • MOHAIR.

Designing engineers in a great many industries have gotten acquainted with Flock—to their decided advantage. These tiny textile particles (available in many lengths and colors) are applied to almost any type of surface very easily, and are highly controllable as to final result. Tell us how you are thinking of using Flock, and we will gladly give you our best advice.

Request samples and prices.

RAYON PROCESSING CO. of R.I. INC.

65 TREMONT ST., CENTRAL FALLS, RHODE ISLAND

Developers and Manufacturers of Printing and Coating Flock

Spraying Polishing Wheels and Buffs

A METHOD of spraying a mixture of cold glue and abrasive on buffs and polishing wheels to keep them cutting continuously has been developed by the J. J. Siefen Company, 5657 Lauderdale, Detroit 9, Mich. Figure 1 shows a foot-operated spray gun mounted on a polishing lathe hood. One stroke of the foot pedal provides for the spraying of a small amount of Nu-Spra-Glu (cold glue and abrasive mixture) on the buff. The mixture dries instantly due to the heat of the buff, the suction from the ventilating system, and the rotation of the wheel.

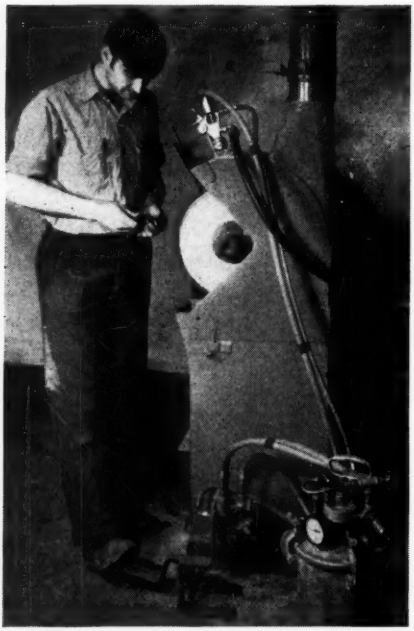


Fig. 1—WV Automatic Air-Operated Spray Gun mounted on a polishing lathe for use in applying a cold glue and abrasive mixture to the buff

The Nu-Spra-Glu can be made up with abrasive having grain sizes from No. 80 to No. 600, thus permitting a wide variation of cut and finish to be obtained. The grain is held on the face of the wheel firmly, thereby enabling its maximum cutting power to be utilized. The cold glue and abrasive mixture can be applied to any kind of buff, including spiral sewed, square sewed, loose, and bias types. Figure 2 shows a spiral sewed buff to which Nu-Spra-Glu has been applied.

For most satin finish work, one spray of the mixture on a well-dressed short-nap wheel is said to be sufficient. For more severe cutting quality, a head can be build up in a very short time and easily maintained to provide uniform results. Finishes approaching mirror-like types can be obtained by using fine grades of Nu-Spra-Glu.

The spray gun equipment shown in the accompanying illustrations is ideally adapted to automatic machines, either straight line or rotary. The actuating value can be automatically operated in many different

The Fast, Effective Method of INSULATING PLATING RACKS

MICCROTUBE on the Contact Wires

Miccrotube, the new, extruded plastic-base tubing, is quickly and easily applied to almost any type of straight or bent contact wires. Its physical characteristics provide exceptional insulating qualities, and its smooth, glossy surface minimizes dragout of solutions. Available in inside diameters from 1/16" to 1".

MICCROTAPE on the Splines

Miccrotape is an extruded tape, with tapered edges which makes it extremely easy to apply and permits much smoother overlapping and fitting into corners. It has unusual properties of dielectric strength, elasticity and tensile strength. Used in combination with Miccrotube, the two materials can be fused by heating to provide an integral coating.

A new six page bulletin provides complete information on Miccrotape and Miccrotube used both for insulation of plating racks and for masking parts prior to selective plating. Full details on physical characteristics, methods of application, and prices are included. Your copy will be mailed you immediately upon request.

MICHIGAN CHROME & CHEMICAL CO.
6342 EAST JEFFERSON • DETROIT 7, MICHIGAN

1896 1945

Results Count

Our Standard USA Brand Felt Wheel saves money on total polishing costs.

U.S.A. D

Sizes 1 to 30" diameter—1/4 to 6" thick.

Any test proves its value.

We shape Felt Wheels or Bobs to sketch.

SHEET FELT

All Grades and Hardnesses.

Standard sizes—36" square, 1/8 to 4" thick.

Strips 24 to 36" wide up to 28 ft. length, 1/4 to 1" thick.

Other sizes as ordered.

Send sample and we will be pleased to quote on requirements.

EASTERN FELT COMPANY

Manufacturers

80 CANAL ST., WINCHESTER, MASS.

ways for various kinds of machines. The spray gun can be mounted in any convenient position on the hood of the machine, and the foot pedal can be set up in any location on the floor which is handy to the operator. The pressure tank in which the Nu-Spra-Glu is contained is arranged to allow for quick and easy refilling.

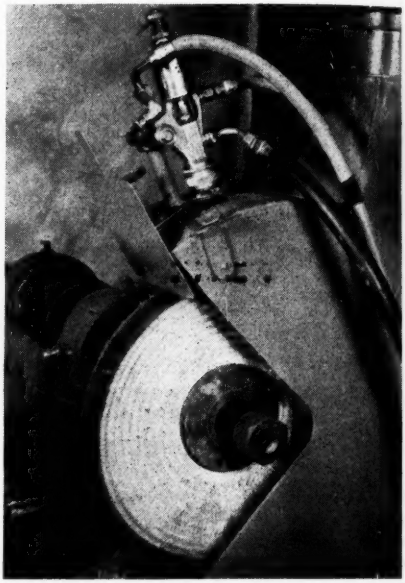


Fig. 2—Close-up view of WV Automatic Air-Operated Spray Gun and spiral sewed buff to which Nu-Spra-Glu has been applied

The pressure tank is available in one to five-gallon capacities, the larger sizes being particularly applicable where several operators are to be supplied with mixture from one source.

In most instances, no extra care of the spray gun is required in order to keep it functioning properly. However, Nu-Spra-Glu has a tendency to settle and must be kept agitated in the pressure tank. To avoid trouble

NOTE: This New Model Thunderbolt carries 10—5" high velocity rockets, 2—500 lb. bombs and 8—50 caliber machine guns. It has a combat range of over 1000 mi. and a speed exceeding 450 m.p.h.

DEOXIDINE

Prepares these and many other ordnance parts properly for finishing

Proper cleaning and finishing help insure the effectiveness of rockets and bombs on their crucial mission of death and destruction.

The unusual type of metal required for Rockets presents special difficulties to manufacturers in meeting specifications for cleaning and conditioning. There are types of DEOXIDINE which will enable fabricators to meet these government requirements.

ACP Technicians have assisted many producers of Bombs and Rockets in solving their cleaning and conditioning problems.

This experience is available to you in selecting the type of DEOXIDINE and the process best suited to your production requirements.

PEROLINE

Protects metals from rust during fabrication, in storage or transit. PEROLINE is a combination oil and chemical which, when the oil phase is removed (with a vapor degreaser or suitable solvents), leaves the surface properly conditioned for paint or other finish. Peroline is of special interest to subcontractors for protecting parts in transit.

Technical Service Data Sheets on DEOXIDINE sent on request to Department A-7.

MANUFACTURERS OF INHIBITORS AND METAL WORKING CHEMICALS

AMERICAN CHEMICAL PAINT CO.

AMBLER ACP PENNA.

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3665 Palmer Ave., Detroit Mich.

Canadian Office and Factory
Walkerville, Ontario

West Coast
Leon Finch, Ltd., 728 E 59th St
Los Angeles, Cal

Metropolitan New York Area
Bricker & Andes, 318 Atlantic Ave
Brooklyn, N. Y.

Eastern Ontario and Quebec
Van Camp Products & Sales Co
177 Parliament St., Toronto, Ont.

with inexperienced operators, it is suggested that the hose line and gun be washed out with water at the end of each day.

In addition to use in connection with polishing wheels and buffs, the Nu-Spra-Glu spray method can also be used for renewing the life of coated abrasive belts. In all cases, the work should be free of grease and oil before application of Nu-Spra-Glu since the mixture will not adhere otherwise.

Selling with Color. By Faber Birren. Published by McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 18, N. Y. 233 pages, 5½ x 8½ inches. Cloth binding, board covers. Price, $2.50.

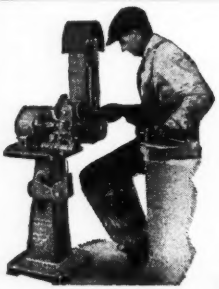
This volume dramatizes the practical role of color in business and industry and shows the reader in a thorough, interesting,, and thought-provoking treatment the tremendous possibilities in the functional use of light and color to sell merchandise and influence human moods. Written by one of America's best known authorities on color and its industrial applications, the book interprets in practical, down-to-earth terms the meaning of color to the businessman in putting his product across to the average consumer.

The 15 chapters comprising the book provide hints about color and personality, harmony in dress and in decoration; a description of the physics of the color spectrum; an analysis of relevent color theories; a comparison of the most important color systems—the Munsell system and the Ostwald system—interpreted in terms of practical value for commercial use; a review of extensive sales records gathered from a variety of sources; and do's and don'ts for mass-market selling of consumers' goods.

Hercules Dresinates. A technical booklet covering the use of Dresinates in alkaline cleaning compounds has been issued by the Paper Makers Chemical Dept. of Hercules Powder Co., Inc., Wilmington, Del. The booklet graphically illustrates the cleaning action of the Dresinates through the use of flourescent or "black" light photography. Tables provided in the booklet show the properties of typical Dresinates. Copy of booklet free upon request.

Airless Wheelabrator. A 24-page informative catalog published by the American Foundry Equipment Co., 525 S. Byrkit St., Mishawaka, Ind., concisely answers questions regarding the Wheelabrator — the simple mechanical unit utilizing controlled centrifugal force for abrasive blasting. The Wheelabrator principle and mechanism are presented by means of interesting facts, diagrams, and tables. The three types of blast cleaning machines on which the Wheelabrator is offered—Tumblasts, tables, and special cabinets—are illustrated and described.

In addition, a partial list of products being Wheelabrated, as well as a list of Wheelabrator users, is included. The range of Wheelabrated metal finishes which can be obtained with the use of various sizes of steel shot and grit abrasive is shown by means of a series of magnified illustrations with suitable descriptions. Copy of Catalog No. 74 free upon request.



"PRODUCTION" TYPE S

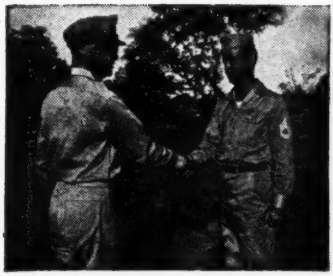
Centerless POLISHER • BUFFER SURFACER

Polisher, buffer, surfacer and vertical or horizontal belt grinder, with centerless feed are all combined in the "PRODUCTION" TYPE S machine.

Ideal for cylindrical polishing or straight line finishing on flat work. Can be used for anything that can be ground or polished—metals, rubber, fibre, wood, etc.

Write for Illustrated Folder

PRODUCTION MACHINE CO. • **GREENFIELD, MASS.**



The Pace of Victory Permits Only A Congratulatory Handshake!

American Industry merits a decoration for its fine record in the Mighty 7th! But, as our newly decorated Pacific heroes return to combat, so industrial leaders are back into Bond action—consolidating Payroll Savings Plan gains!

Many are working to keep all new subscribers to the Payroll Savings Plan. By selective resolicitation each is being urged to maintain his Bond buying allotment. Many are also using selective resolicitation to urge all workers who increased their subscriptions to continue on this farsighted basis.

Help to curb inflationary pressures and harvest peacetime prosperity by holding your Payroll Savings Plan to the mark set in the Mighty 7th!

The Treasury Department acknowledges with appreciation the publication of this message by

PRODUCTS FINISHING

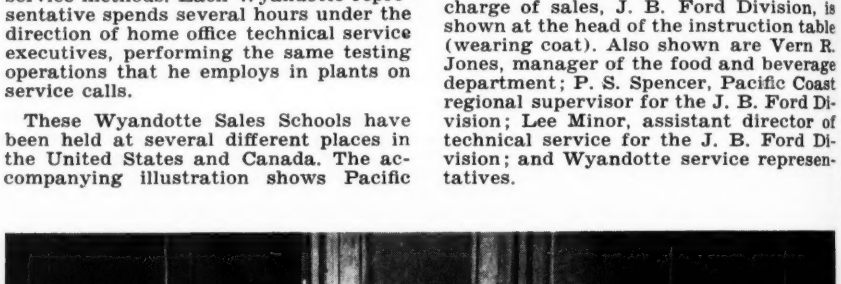
This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and War Advertising Council

News of the Industry

Wyandotte Sales Schools

Representatives of the J. B. Ford Division of Wyandotte Chemicals Corporation have been attending sectional meetings at which they study and recheck and service methods. Each Wyandotte representative spends several hours under the direction of home office technical service executives, performing the same testing operations that he employs in plants on service calls.

These Wyandotte Sales Schools have been held at several different places in the United States and Canada. The accompanying illustration shows Pacific Coast Wyandotte representatives checking their service methods at a four-day school and conference held at the Sir Francis Drake Hotel in San Francisco. Titration was the subject of the "refresher" course when the picture was made. Carter B. Robinson, vice president in charge of sales, J. B. Ford Division, is shown at the head of the instruction table (wearing coat). Also shown are Vern R. Jones, manager of the food and beverage department; P. S. Spencer, Pacific Coast regional supervisor for the J. B. Ford Division; Lee Minor, assistant director of technical service for the J. B. Ford Division; and Wyandotte service representatives.



Wyandotte Sales School recently held at the Sir Francis Drake Hotel in San Francisco

Milton F. Beecher Honored

Milton F. Beecher, director of research for the Norton Co., Worcester, Mass., manufacturer of abrasives, grinding wheels, and refractories, has been awarded an honorary degree of doctor of engineering by Iowa State College. The Iowa State College Alumni Association of Chicago, the General Alumni Association and Iowa State College also honored him by the presentation of a merit award at Alumni Day. Mr. Beecher was commended for his work in the field of physical improvement of human surroundings and facilities through ceramics and its associated industries.

One of the early engineers to receive a bachelor of science degree in ceramics, Mr. Beecher was graduated from Iowa State College in 1910. He is a charter member of the Fellows of the American Ceramic Society and served that society as a member of its committee on standards from 1917 to 1923 and of its committee on publications from 1933 to 1936. He also served on its board of trustees from 1919 to 1921. In 1944, he was elected president of the Institute of Ceramic Engineers and has been affiliated most of the time with its refractories division.

In addition, Mr. Beecher is a member of the founders' group of the Institute of Ceramic Engineers, of Tau Beta Pi, national engineering honorary fraternity, and Phi Kappa Phi, honorary scholastic fraternity. He recently was honored by election to Sigma Xi, national scholastic fraternity, by Worcester Polytechnic Institute.

New Technical Director

The appointment of Dr. David M. Gans as technical director has been announced by the Quaker Chemical Products Corp., Conshohocken, Pa., developer and manufacturer of chemical specialties for the metal-working and textile processing and finishing industries. Dr. Gans has already entered upon his duties, which include the supervision of Quaker's Research, Service and Control Laboratories.

Dr. Gans received his Ph.D. degree from the University of Chicago in 1929 and remained with that institution in the department of chemistry until 1935, at the same time engaging in chemical consulting work. In the fall of 1935, he joined the Interchemical Corporation, being associated first with the United Color and Pigment Division and later with the corporation's Central Research Laboratories, where he served as assistant director of research from 1939 until resigning to join Quaker Chemical Products Corporation on May 1 of this year.

Dr. David M. Gans

A specialist in colloid chemistry and its allied subjects, Dr. Gans is a member of the American Chemical Society, American Physical Society, American Society for Metals, Chemists Club of New York, American Institute of Chemists, Electron Microscope Society, Society of Rheology, Sigma Xi honorary chemical fraternity, and Phi Beta Kappa.

Promoted to Manager of Advertising

Ethel Serfas Klingman, formerly assistant manager of advertising, has been promoted to manager of advertising of the Pennsylvania Salt Manufacturing Co., Philadelphia 7, Pa., succeeding H. M. Ellsworth, who resigned on May 1.

Udylite District Manager

The Udylite Corporation, 1651 E. Grand Blvd., Detroit, Mich., announces the appointment of W. H. Ross as district manager of the Michigan and

Northern Ohio territory. Mr. Ross is well known throughout this area, having covered it for several years as a sales engineer for Udylite.

W. H. Ross

Before joining the Udylite organization, Mr. Ross was employed by United Chromium Corporation and by Commonwealth Industries, where he gained a thorough, first-hand knowledge of plating and heat treating as a sales engineer. He is a graduate of the University of Cincinnati.

H-VW-M to Receive Golden Anniversary Certificate

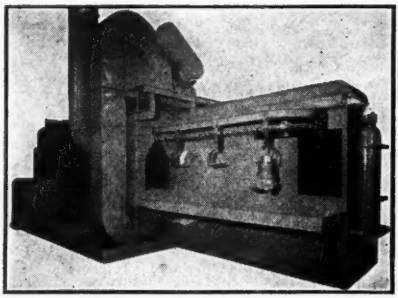
The Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturer of electroplating equipment and supplies, will receive during this year a golden anniversary certificate from the National Association of Manufacturers as a founding company which has been outstanding in contributing to American industrial progress.

Truscon Laboratories Acquired by Devoe & Raynolds

Rounding out a program of balanced development for its postwar markets, the Devoe & Raynolds Co., New York, N. Y., has acquired Truscon Laboratories, Inc., Detroit, Mich., and its varied lines of anti-corrosives, water and damp-proofings, and maintenance finishes. R. A. Plumb, president of Truscon Laboratories, will continue as president of the Truscon division of Devoe & Raynolds.

R. A. Plumb

Other officers of Truscon, including G. L. Turner, vice president and sales



HYDRO-FLOW
INDUSTRIAL WASHING MACHINES

Streamlined design. Recirculating hot or cold air blow off. Hidden motors, pumps and pipes are easily accessible. Piping and nozzles located to insure thorough cleansing of all surfaces. Rugged and efficient pressure pump. Corrosion resistant spray nozzles—from mist to open stream. Handling alkali to varsol as cleaner. Monorail, Belt, or Gravity type conveyors designed to carry any shape or size material. Variable speeds on conveyor drive synchronize production.

INTERNATIONAL CONVEYOR & WASHER CORP.
Write for circular
652 E. FORT ST. DETROIT 26, MICH.

Hammond

OF KALAMAZOO

"Good Machinery Since '82"...

This slogan we try to live up to and improve upon with each passing year. Having come to leadership in our field we strive to maintain our responsibilities through sound progress contributed by a balanced team of younger and older heads.

Our Machinery lines include: Carbide Tool Grinders, Abrasive Belt Grinders, Polishing and Buffing Lathes, Automatic Polishing and Buffing Machines and Cylindrical Finishing Machines. Broadly, these are in the finishing field and you can look to us for up-to-date solutions of your finishing problems.

Lee K. Hammond PRESIDENT

Hammond Machinery Builders INC.

1622 DOUGLAS AVENUE - KALAMAZOO 54, MICH.
Eastern Branch: 71 West 23rd St., New York 10, N. Y.

Now Available AGAIN!

BALLOU'S IMITATION

CHROME ALUMINUM PASTE

Will produce a beautiful imitation of a real plated finish when used in conjunction with quick bake synthetic or varnish type vehicles.

Also other grades of Aluminum Powders and Pastes ranging from 170 to 325 mesh.

Send for Sample and Prices

No allotment or priority required.

EDWARD C. BALLOU CO.

6 Varick Street — New York 13, N. Y.

manager; R. E. Madison, production superintendent; J. J. Super, vice president and treasurer, and C. E. Thompson, vice president in charge of the Truscon Cement Tile Plant, will also be retained. General policies will remain unchanged.

Lance Appointed Field Representative

W. P. Drake, manager of sales, Special Chemicals Division, Pennsylvania Salt Manufacturing Co., Philadelphia 7, Pa., announces the appointment of John J. Lance as field representative for that division in the Cleveland-Mansfield-Youngstown area, with headquarters in Cleveland. Mr. Lance was formerly a methods engineer at the Bendix Aviation Corporation.

Brush Sales Manager Appointed

The appointment of Robert Wier, Jr. as sales manager of the Brush Division of the Osborn Manufacturing Co., Cleveland, is announced by company officials. A native of Wilmington, Delaware, Mr. Wier brings to Osborn a background of engineering and sales experience gained over a period of nearly 30 years in the chemical, oil, and ammunition industries following his graduation from Sheffield Scientific School of Yale University in 1918.

Robert Wier, Jr.

Mr. Wier began his business career as a junior engineer with E. I. du Pont de Nemours & Company in its Nashville, Tennessee, Racine, Wisconsin, and Deepwater, New Jersey, plants. His initial undertaking for Osborn will be a survey of reconversion problems and postwar markets to be conducted in the 30 districts of the United States served by this firm.

INDIAN BRAND

Polishing Abrasive
Long Wearing

Indian Brand polishing abrasive has been perfected by our engineers as a substitute for imported Turkish Emery.
This new, long wearing, economical abrasive grain, now being used in many leading defense plants, has brought outstanding results to its users.

Send for trial lot—Free.

HAMILTON
Emery & Corundum Co.
CHESTER MASS.

Appoints New Sales Representatives

The Brush Development Co., Cleveland, Ohio, manufacturer of surface measuring equipment, announces the appointment of the following new sales representatives: Burlingame Associates, Ltd., New York City, for the eastern New York and northern New Jersey area; Morris F. Taylor Co., Silver Spring, Md., for the central Atlantic, southeast, and southern states; Terwilliger Sales Co., Kansas City, Mo., for Iowa, Kansas, Nebraska, and Missouri; David M. Lee Co., Seattle, for Washington, Oregon, and Idaho.

Chief Chemist for Hercules

The appointment of Dr. Richard P. Carter as chief chemist of the Hercules Powder Company's Mansfield, Mass., chemical plant has been announced by Raymond Schlaanstine, director of operations of Hercules synthetics department. Dr. Carter, who for the past two years has been assistant to Mr. Schlaanstine in Wilmington, Del., succeeds Dr. R. L. Marsh, who has resigned.

J. H. Dodds Transferred

Due to the increased distribution of its products in the Middle West, Pierce & Stevens, Inc., Buffalo, N. Y., has transferred James H. Dodds to Chicago, Ill., where he will be associated with R. S. Inglehart, sales representative of the same company. In addition to the Chicago area, Mr. Dodds' sales activities will include trade contacts in Wisconsin, Indiana, and Ohio to supplement existing sales service.

Mr. Dodds joined the sales department of Pierce & Stevens, Inc., in 1936. In 1942, after having served as sales engineer in New York state and Pennsylvania, he enlisted in the U. S. Army Air Force, which he served for a period of more than two years as a flight instructor.

James H. Dodds

Among the products manufactured by Pierce & Stevens, Inc., are lacquers and allied protective coatings, adhesives, emulsions, laminating and impregnating compounds, thinners, enamel reducers, cleaners, and solvent blends.

"ROBINSON'S ASSAYED"

Gold Plating Solutions

Are Nationally Endorsed

MADE BY **A. Robinson & Son**
131 CANAL ST. NEW YORK

Sales Engineer Appointed

Earl F. Gregg has been appointed sales engineer of electrical tapes in the Eastern division of Minnesota Mining and Manufacturing Company. In addition to direct account responsibility, he will have supervision of electrical tape salesmen in the Boston, New York, Buffalo, Philadelphia, and High Point divisions. Mr. Gregg has been with the 3-M Company in sales since 1941.

Earl F. Gregg

New Phillips Manager

The Phillips Chemical Company announces the appointment of Dr. Meyer Agruss as general manager. Dr. Agruss has a wealth of background both in research and industrial chemistry and has numerous publications and patents to his credit. He received his chemical engineering degree at Washington University and later, while doing post graduate work at Chicago University, conducted and operated a pilot plant for the extraction and isolation of Element 91, Protoactinium. This seccessful research feat earned him a Ph.D. degree in chemistry.

In the industrial field, Dr. Angruss was assistant to the plant superintendent of the Titania Pigment Corporation and later was in charge of metallurgical research at the A. C. Smith Corporation in Milwaukee. For the past ten years, he has been associate director of research for the Pure Oil Company.

JENSEN *Light-Weight* CONVEYORS GIVE YOU THESE 4 ADVANTAGES

1 More easily and quickly installed.

2 Carry up to 175 pounds per hook, depending upon length of conveyor.

3 No lubrication required . . . you don't soil parts . . . you save maintenance time.

4 Available in Loop Around, Straight Line, Dual-Strand, Belt and Special Types.

WRITE for CATALOG

JENSEN SPECIALTIES, Inc. **JENSEN** 9331 FREELAND DETROIT 27, MICH.

DESIGNERS and BUILDERS of "DUAL HEAT" INFRA-RED OVENS • STANDARD and SPECIAL CONVEYORS

Dr. Stine Retires

For reasons of health, Dr. Charles M. A. Stine retired on June 30 as a member of the executive committee of E. I. Du Pont de Nemours and Company and as its advisor on research and development. He retains, however, the positions of vice president and director. Dr. Stine was succeeded on the executive committee by Roger Williams, assistant general manager of the Explosives Department, who was elected a vice president and member of the board of directors and assumes the duties of advisor on research and development.

The retirement of Dr. Stine as a member of the executive committee comes after 38 years with the company, during all of which time, in various capacities, he was closely identified with its research and development. In 17 years after joining the company in 1907, Dr. Stine rose from a minor research position to chemical director. Six years later, in 1930, he was elected to the company's board of directors and made the vice president and a member of the executive committee advisory over all Du Pont research and development matters.

DeVilbiss Spray Painting School

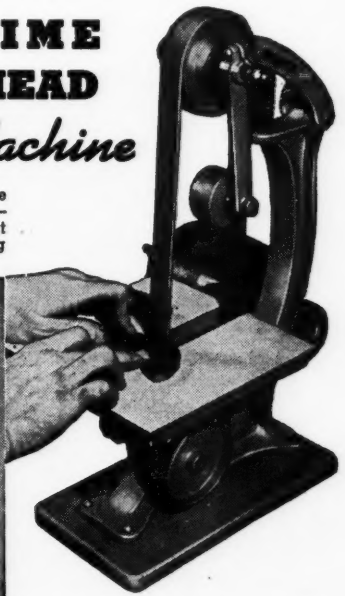
The DeVilbiss Co., 300 Phillips Ave., Toledo 2, Ohio, will hold four one-week courses for industrial finishers in the second half of its 1945 School of Spray Painting. Sessions starting July 16th, September 17th, October 15th, and December 10th, each covering the same classroom instruction and shop work, will be free to users of DeVilbiss spray painting equipment.

Industrial finishers are urged to write for reservations in any class at least two weeks in advance.

Cellulo Filter Discs and Pads for intense filtering and liquid polishing are the subject of an illustrative and descriptive bulletin now being distributed by The Cellulo Co., Sandusky, Ohio. Copy free upon request.

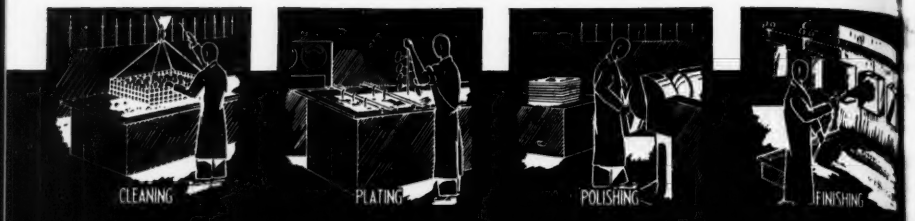
18 WAYS TO SAVE TIME & MONEY with the MEAD Industrial Burring Machine

New circular explains, illustrates 18 ways in which the Mead Industrial Burring Machine saves time and money—also contains special Grit Guide. Every industrial plant needs this "Jack-Of-All-Trades" machine. Your burring can be done in "free time" — install these machines by every machine tool which leaves burrs. Grinds, finishes both outside and inside cut-out openings. Immediate delivery in most cases. Write for the informative Money-Saving circular now.



MEAD
Specialties Co.
4114 N. Knox Ave.
Dept. PF-75
CHICAGO 41, ILL.

For METAL—PLASTIC—WOOD



Fostoria Portable Infra-Red Equipment

In response to an ever increasing demand from industry and service shops for mobile infra-red equipment for use in multiple baking, drying, dehydating, and preheating operations. The Fostoria Pressed Steel Corp., Fostoria, Ohio, has designed a complete line of portable model infra-red units. The Model No. 60-447 illustrated herewith provides a uniform, intense radiation of approximately 2,000 square inches. The complete group of four models provides radiation coverage ranging from 275 to 2,000 square inches.

The reflector assembly of each model is attached to an upright support with base by means of an arm equipped with a rotating swivel device which permits radiation in any direction. In addition, the reflector assembly can be moved up or down on the upright, thus affording maximum flexibility. Each model can be provided with either gold plated reflectors or gold reflecting surfaces, and the majority of the models are wired to accommodate lamps ranging from 125 to 500 watts, 120 volts. Each model is equipped with heavy duty casters to allow for easy rolling and is designed so as to eliminate possibility of tipping with reflector assembly at any position.

Fostoria Model 60-447 Portable Infra-Red Unit

Kushner High Speed Plating Machine

A machine for use in the high speed electroplating of wire, metal ribbon, and small parts has been developed by Joseph B. Kushner, 233 W. 26th St., New York 1, N. Y. The machine is

designed to handle wire from 0.0025 inch up to light cable at speeds ranging from 150 to 750 feet per minute and higher. The deposits of metal can be made to close specifications with regard to weight and thickness.

The Kushner High Speed Plating Machine may be obtained in overall lengths ranging between 18 and 36 feet, depending upon the weight and number of deposits of metal to be made on the work. For example, a machine capable of plating a two per cent by weight deposit of gold on fine silver wires at a speed of 300 feet per minute is 22 feet long. The machine can be arranged to handle 12 lines of wire at one time, each receiving a uniform deposit of metal. Due to the design of the machine, breakage of wire is said to be reduced to a minimum.

In another variation, a machine designed for plating small parts can be used to gold or silver plate radar parts at very high speeds to specification deposits of 20 to 40 m.s.i. The high speed zinc plating of steel cartridge cases of 30 and 50 caliber sizes and electrical parts plating with brass or silver comprise additional applications for the Kushner High Speed Plating Machine.

Tubular Dustex Dust Collector

Applying the principle of reducing the ratio of air volume to filter surface area, the Dust Filter Co., 116 N. La Salle St., Chicago 1, Ill., has developed a Tubular Dustex Dust Collector which, it is claimed, is designed to collect and retain any type of fine dust and lint. The unit is available in three sizes, all of which are portable and self-contained and are constructed to meet the need for an efficient means of removing dangerous and obnoxious dusts from the air as the result of grinding, buffing, polishing, and similar operations.

The filter surface area of the largest size Tubular Dustex Dust Collector is 48.8 square feet. The filter surface areas of the smaller units are in proportion. According to the manufacturer, the large filter surface area of the Tubular Dustex lessens the volume of air drawn through any portion of the filter at one time, thus preventing minute particles from filtering through. It is also said to diminish the static pressure loss

Tubular Dustex Dust Collector

usually brought about by the impingement of the surface area by large quantities of dust.

No collector bags are used in the Tubular Dustex Collector. The filter surfaces are tubular in design and are bottomless. Dust filtered through them is collected in a pan at the bottom of the unit. The filtered air is discharged through a large muffler to deaden air noise but with minimum resistance.

The Tubular Dustex Collector is said to maintain a static air pressure of more than 4 inches at a velocity of over 5,000 l. f. m. and is claimed to be completely fireproof. Units weigh from 150 to 250 lbs. and are 36 to 48 inches high. Motors are ¾ and 1½ h. p. alternating current.

Turco "Steam-Off" Cleaning Compound

Said to be particularly effective in the removal of heavy, stubborn grease and dirt from iron and steel surfaces, including gasoline and Diesel engines,

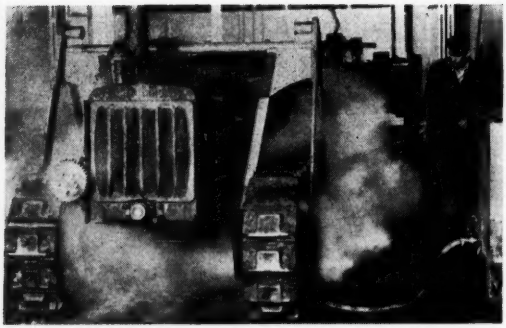


Illustration showing Turco "Steam-Off" being used to clean a tractor

steam shovels, tractors, locomotives, and road building machinery, a heavy duty steam cleaning compound is now being marketed under the trade name of "Steam-Off" by Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, California.

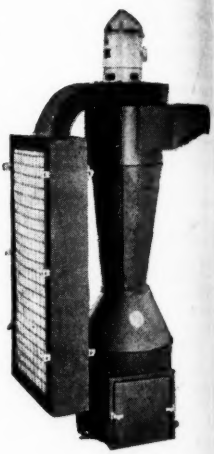
Extremely powerful in its penetrating and emulsifying actions, the compound combines a high degree of quick cleaning energy with a maximum ability to soften water, thus resulting in a cleaning solution which can be rinsed freely from surfaces, leaving no film, curds, water spots, or streaks, it is claimed. According to the manufacturer, the compound is designed to function without the loss of cleaning power in the hardest water and to prevent the depositing of hard water scale in coils and other vital parts of steam cleaning machinery.

Used as a stronger solution, Turco Steam-Off is said to have the ability to remove unwanted paint as it cleans, thus making it particularly effective for the complete overhauling or reclamation of products.

Torit Motorized Cyclone Type Dust Separators

A line of motorized cyclone type dust separators for use in connection with grinding, polishing, and buffing operations is now being marketed by the Torit Manufacturing Co., 314 Walnut St., St. Paul 2, Minn. The line comprises essentially four models which are available with or without an after-filter suspended to the exhaust outlet.

Between 75 and 95 per cent of the dust drawn from hoods surrounding polishing or grinding wheels is said to be collected in the Torit Cyclone Dust Separator which separates the dust from the air through centrifugal action and causes the dust particles to fall into a chamber in the bottom of the unit. Heavy particles are said to be more easily separated in the cyclone then light particles since they have a tendency to drop out of the air stream by gravity.



Torit Motorized Cyclone Type Dust Separator Equipped with After-Filter

Where heat loss is not important and where it is necessary to comply with a local ordinance prohibiting recirculation of air, a separator with-

BETTER PLATING, LESS COST!
"MGC" ELECTROPLATING EQUIPMENT
Write for Interesting Details TODAY!
MOTOR GENERATOR CORP., HOBART SQ. PF-75 TROY, OHIO

Now for EVERY WORK SHOP!

"NEW Invention Electroplates by BRUSH

Easy to Plate CHROMIUM
GOLD, SILVER, NICKEL, COPPER

. . . For Pleasure and Profit!

If you have a workshop—at home or in business—you need this new Warner Electroplater. At the stroke of an electrified brush, you can electroplate models and projects—you can replate worn articles, faucets, tools, fixtures, silverware, etc with a durable, sparkling coat of metal . . . Gold, Silver, Chromium, Nickel, Copper or Cadmium. Method is easy, simple, quick. Everything furnished — equipment complete, ready for use. *By doing a bit of work for others, your machine can pay for itself within a week.* So make your shop complete by getting a Warner Electroplater right away. Send today for FREE SAMPLE and illustrated literature. ACT AT ONCE!

For
- MODEL MAKERS
- MAINTENANCE
- HOBBY SHOPS
- HOME SHOPS
- SALVAGE PARTS

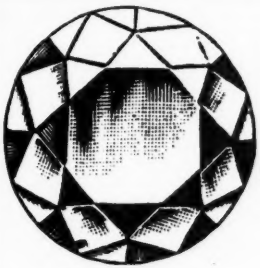
Warner Electric Co., Dept. C-53
663 N. Wells St., Chicago 10, Ill.

For present day and future requirements, use a Lupomatic DEBURRMASTER machine to deburr, cut down and polish metal and plastic parts.

A DEBURRMASTER installation reduces your production costs and improves your product.

Send samples today for a free demonstration.

LUPOMATIC TUMBLING MACHINE CO., INC.
4510 BULLARD AVE. BRONX, N. Y.



Achieve Brilliancy

in Plating Solutions and Finishes

SPARKLER *"Horizontal Plate"*

FILTRATION

The Sparkler process not only takes out all microscopic impurities, but also imparts to solutions a lustre and polish that is reflected in superior finished products. Rejects become a relic of the past, plating time is reduced and the volume of filtrate increased.

SPARKLER MFG. COMPANY
255 Lake St.
Mundelein, Ill.

SPARKLER HORIZONTAL PLATE FILTERS

Avail yourself of our free filtration engineering service.

Torit Motorized Cyclone Type Dust Separator with Extra Large Dust Storage Capacity

out after-filter is recommended. Where filtered air may be returned to the room and it is impossible to exhaust partially dust-laden air outside, units having after-filters suspended from the exhaust outlets are recommended. With this type of equipment, most of the dust is said to be trapped in the bottom reservoir, while that which passes through the cyclone is trapped in the after-filter.

The case of the after-filter measures 18x38x6 inches or 26x50x8 inches, depending on the size of separator on which the after-filter is installed, and includes a pad of glass insulation wool filter on each of its two open surfaces. The filter pads may be cleaned when dirty or may be readily replaced with new pads.

The Torit Cyclone Type Dust Separator is supplied complete with an end-mounted motor, fan, housing, and motor starter.

Gerlach "70 Stripper"

A chemical compound which is said to be especially designed for the removal of heavy baked japans, lacquers, pigmented paints, enamels, synthetics, and carbon from lynite, aluminum, magnesium white metals, steel, bronze, brass and other metals with no deleterious effect on soft alloys is now being marketed under the trade name of "70 Stripper" by the E. A. Gerlach Co., 23rd and Ontario Sts., Philadelphia 40, Pa. The compound is claimed to be particularly useful in cleaning and stripping pistons, connecting rods, cylinders, valves, blocks, and other parts of aircraft motors.

Parts to be stripped are placed in wire baskets and lowered into an open metal tank containing a solution of one part 70 Stripper and four parts water, the solution being heated by means of steam coils to a temperature of 57 to 63 deg. C. (135 to 140 deg. F.). After the parts are stripped, they are removed and washed thoroughly in warm water or any hydro-carbon. Bits of coating still sticking to the metal can be readily removed by using a stiff fiber brush with gasoline or kerosene. Gerlach 70 Stripper may also be used in a washing machine for removing paint, carbon, inks, sludge, dope, wax, and practically any foreign matter collecting on metals.

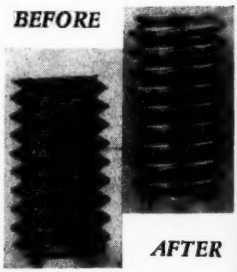
SOL-KLEAN
for
Better Paint
Adhesion
INDUSTRIAL CHEMICAL PRODUCTS CO.
DETROIT 7
Milwaukee **Fort Wayne**

CLEAN, SMOOTH THREADS

Use Roberts Burring Compond for • Faster production • Complete contacting of all irregular contours due to flexibility of wheels • Smooth, clean work and good color • Preserves all essential dimensions.

Write for samples and suggestions.

ROBERTS ROUGE CO.
STRATFORD • CONNECTICUT



CUT DOWN REJECTS WITH ORVUS

IN YOUR METAL CLEANING BATHS

This sulfated fatty alcohol Cleansing Agent is EFFECTIVE

—as a surface tension lowering agent

—as an emulsifier

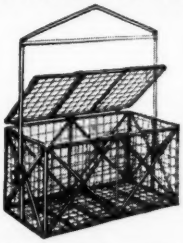
—in dispersing lime soaps which might cause poor plating results if permitted to deposit on the metal

Write for further information about Orvus to

PROCTER & GAMBLE, Cincinnati, Ohio

ROLOCK

PROCESSING CARRIERS



Pickling basket, capacity 800 lbs. of shell cups... revolved by hand.

Baskets, crates, trays, racks, etc., for handling metal parts through finishing processing should be custom-built. Rolock invites you to submit specifications for Carriers up to 4 tons capacity or tell us your problems. Perhaps a Monel trunnion basket which insures good drainage of pickling solution is the answer. Whatever it is, we can make it.

Send for Catalog.

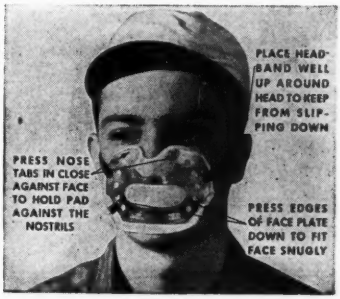
ROLOCK, INC.

1400 Kings Highway East, Fairfield, Conn

SEND $1.00 FOR ONE MARTINDALE PROTECTIVE MASK and 50 No. 1 Refills

or $1.25 if you prefer No. 2 Refills

Weigh Less Than ½ oz.


PLACE HEAD-BAND WELL UP AROUND HEAD TO KEEP FROM SLIP-PING DOWN
PRESS NOSE TABS IN CLOSE AGAINST FACE TO HOLD PAD AGAINST THE NOSTRILS
PRESS EDGES OF FACE PLATE DOWN TO FIT FACE SNUGLY

Not Recommended for Toxic Dusts or Free Silica

LIST PRICES—F.O.B. CLEVELAND, OHIO

Masks	$0.25 each
No. 1 Refills (std. weight)	.01½ each
No. 2 Refills (heavyweight)	.02 each

Masks packed in individual envelopes.

Refills packed in envelopes of 25.

The No. 2 Refills contain twice as much filtering cotton as the No. 1.

Write for Bulletin 348 showing quantity discounts on orders of $5.00 and over

If payment accompanies order we will pay parcel post or express charges. Minimum order for C.O.D. or charge account $2.00

Martindale Electric Co.

1367 HIRD AVE. CLEVELAND 7, OHIO

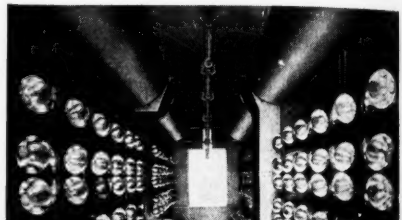
Du-Lite "Phosteel"

The Du-Lite Chemical Corp., Middletown, Conn., announces the addition of a phosphate type finish for iron and steel, to be known as "Phosteel," to its line of Chemifinishes.

According to the manufacturer, Du-Lite Phosteel, in conjunction with an oil dip, is satisfactory as a final finish for many applications since it provides unusual protection from dust. It is said to be ideal as a base for organic finishes since the crystalline surface of the microscopically porous coat grips the paint or lacquer so that chipping or pealing is practically impossible.

Trumbull "Raymersion" Oven

Known as the "Raymersion," an infra-red oven for high speed heating in low temperature industrial service is announced by The Trumbull Electric Manufacturing Co., Plainville, Conn. The oven includes the special feature of prefabrication, so standardized as to permit the widest range of utility in the size of the oven for any type of product, any heating capacity, and any handling method. According to the manufacturer, temperatures as high as 500 deg. F. can be obtained, often in seconds, depending on the type and mass of products involved.



Interior view of Trumbull "Raymersion" Oven showing the positioning of infra-red lamps

Combining the advantages of convection and zoned heat application, the Trumbull Raymersion Oven is made up entirely of such standard parts as frame members, wall panels, ventilation ducts, and conventional control equipment. Ovens of virtually any size, shape, and heat capacity can be constructed for batch or continuous heating processes in combination with trolley, belt, or other types of material-handling equipment.

ALLWOOD

"Vienna Brand" Lime

Made from Limestone that is identical in chemical analysis and geological structure with European Imported Lime. Tests show a "lime cake" made from Allwood "Vienna Brand" Lime equals the finish made from imported lime.

WRITE FOR FULL PARTICULARS

ALLWOOD LIME COMPANY

Manitowoc : Wisconsin

Quickest to Use **MOST ECONOMICAL MASKS for PAINTING, SPRAYING, ETC.**

Strong, heat-treated spiral wound fibre tubes and caps. Slide easily. Fit closely. No slip-off.

PRECISION PROTECTORS

Any shape to specification. Formed, crimped or perforated to fit. Also used as Dust Caps and Thread protectors against dirt and corrosion. *Low cost!* Send for Bulletin and prices.

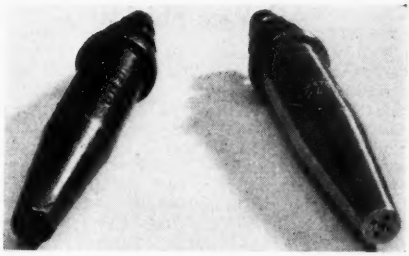
PRECISION PAPER TUBE CO. 2053 W. Charleston St., Chicago 47, Illinois

Turco Chemical Method for Reclaiming Burner Tips and Fittings

A simple chemical method for reclaiming burner tips and welding torch fittings without manual labor is announced by Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif. Using this two-stage method, burner tips and fittings are first soaked in Turco L-780, a liquid material with solvent and penetrating actions which digests carbon and gum deposits, thus softening and loosening them so that they can be freely rinsed away. The material is said to be non-corrosive to copper and brass, non-inflammable, and to readily mix with water.

The compound is used at room temperature in an ordinary steel tank or container such as is readily available in most plants. An overnight soak is claimed to be sufficient to loosen and soften all carbon and dirt on the parts. At the completion of the soaking period, the parts are rinsed clean in a vigorous air and water spray.

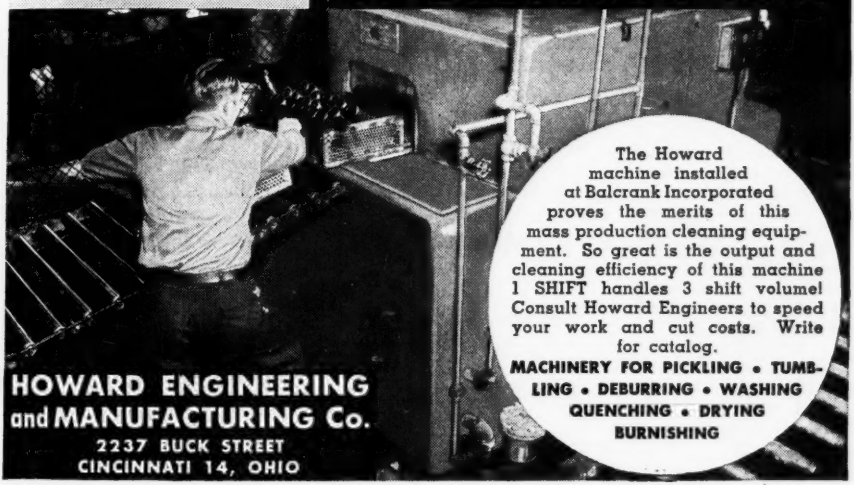
After the Turco L-780 treatment, the parts are physically clean but are more or less heavily oxidized and tarnished due to the high heat to which the equipment is exposed. A short immersion in Turco Brass Dip is said to completely remove this film from each part, leaving the metal thoroughly clean and bright. Turco Brass Dip is used in a ceramic crock or container and not only brightens the metal but is also said to passivate the surface, thereby rendering it resistant to corrosion between cleaning periods.



(Left) Burner tip before being reclaimed. (Right) Same burner tip after being reclaimed using the Turco Chemical Method

This HOWARD Machine

Handles 3 Shift Volume in 1 Shift at BALCRANK INC.



The Howard machine installed at Balcrank Incorporated proves the merits of this mass production cleaning equipment. So great is the output and cleaning efficiency of this machine 1 SHIFT handles 3 shift volume! Consult Howard Engineers to speed your work and cut costs. Write for catalog.

MACHINERY FOR PICKLING • TUMBLING • DEBURRING • WASHING QUENCHING • DRYING BURNISHING

HOWARD ENGINEERING and MANUFACTURING Co.

2237 BUCK STREET
CINCINNATI 14, OHIO

AO Face Shields

Four face shields for light duty protection in the performance of such operations as metal sawing, acid handling, buffing, sanding, and light grinding are announced by the American Optical Co., Southbridge, Mass. The shields are available with three types of button-on windows; namely, clear cellulose acetate for general purposes, 24-mesh screen for heat protection, and fiber with a filter glass window for welding.

Light, comfortable, and sturdily made to withstand hard use, the face shields, due to their design, may be worn without discomfort by workers wearing prescription glasses. All parts of the shields are readily interchangeable.

The AO F-100 Face Shield has an adjustable elastic headband which may be worn low on the head for additional comfort. Genuine leather sweatbands, like the windows, are buttoned onto and can be easily removed from the shields. The fiber headpiece is designed to hold the device comfortably and firmly on the head. The shield may be instantly thrown up when not in use and is held firmly in position by means of friction joints. The removal of a pivotal nut, spider, and washer allows for instant interchanging of parts.

AO Face Shields

The F-200 shield is the same as the F-100 except that it is fitted with a standard spark deflector (or forehead guard) for extra protection. The F-300 shield is identical to the F-200 with the exception of the back headband which is of fiber construction and is styled to fit the lower part of the head snugly and comfortably. The long band slides within a fiber sleeve, thus permitting easy adjustment to varying head sizes and eliminating hair pulling. The headband is adjusted through a knurled nut turning on a threaded stud.

The F-400 shield has all of the features of the F-300 shield plus a full spark or head deflector designed primarily for working in confined areas where head bumps or lacerations may occur. This semi-skull guard is said to protect the forehead and upper scalp from flying chips, small cuts, and bumps.

INVESTIGATE . . .

"BLAXITE"

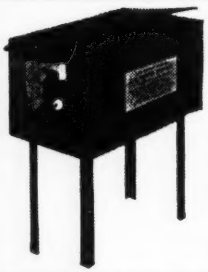
RAPID BLACK OXIDE FINISHES

for

STEEL — ZINC — BRASS

THE TOBLER CHEMICAL CO.

28 OLIVER ST., BOSTON



HEAT WAX (AXS 1015) For Export Packaging

"UNITED" DESICCITE No. 25

CLEAN METALS *Faster! Cheaper! Safer!*

Cooper specially engineered electric or gas heated thermostat controlled tanks pay for themselves in a hurry. A multitude of uses. 5, 15, 30, 60 gallon sizes and larger. Quick delivery. Write for circular.

Also Chemicals, Rust Preventatives, Silica Gel, Etc.

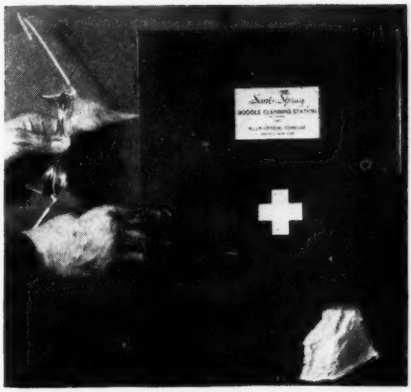
D. C. COOPER COMPANY, 20 East 18th Street, Chicago 16, Illinois

Allen "Sani-Spray" Goggle Cleaning Station

A cleaning station for industrial goggles, to be known as the "Sani-Spray," is announced by the Allen Optical Co., 15-17 Allen St., Buffalo 2, N. Y. The station consists of a self-contained heavy duty steel atomizer cabinet designed especially for applying Sani-Spray goggle cleaner. The cabinet contains a refillable type quart jar of Sani-Spray, a supply of tissue paper, and a built-in receptacle for used cleaning tissues.

A simple push-button control provided on the cabinet releases, when pressed, a fine mist of cleaner from an orifice located on one side of the station. Pressure for the cleaning solution is provided by connecting the cabinet to the plant air line. An adjustable control valve is used to regulate the predetermined amount of spray that is applied to the goggles.

Equipped with a locking arrangement to prevent tampering with the contents of the cabinet, the Allen Sani-Spray Goggle Cleaning Station is constructed to occupy a minimum of wall space and may be readily located in any convenient position throughout the plant. The spray provided by the station is not only said to clean but also fog-proof goggles. The Sani-Spray cleaner is available in one and five-gallon containers for refilling the quart jar in the station.



Allen "Sani-Spray" Goggle Cleaning Station

For Degreasing... Cleaning to CUT DOWN REJECTS

Here's positive proof (shown to left) that you can speed up production and cut down rejects with a Phillips Engineered Vapor Degreasing Unit using PHILLSOLV. It gives you a higher production ratio at a lowered processing cost.

SAFER for Light Metals

PHILLSOLV cleans ferrous or non-ferrous metals without pitting, scoring, or etching. Lowest toxicity, higher efficiency, non-inflammable PHILLSOLV, used with a Phillips Vapor Degreaser, cleans 60 per cent faster—better—safer. Phillips Vapor Degreasers are engineered in a wide range of needed sizes from portables up to mammoth heavy-duty conveyor degreasers handling 14,600 pounds per hour.

The ONLY all-electric degreasing machine that reclaims its own solvent!

Phillips Vapor Degreaser reclaims its own solvent while the machine is in operation . . . no need to shut down for distilling!

Send for FREE Degreasing Manual

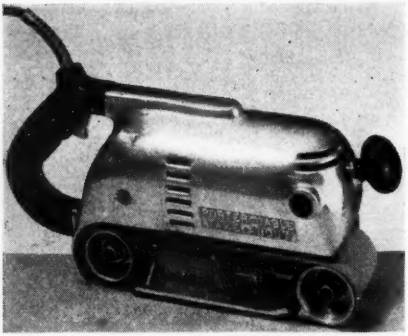
We make power spray washers, surge washers, stripping and dip tanks . . . a complete line of metal cleaning machinery.

Distributors in All Principal Cities

• *These Phillips Units Now in Operation at Madison-Kipp Corp., Madison, Wis.*

PHILLIPS MANUFACTURING CO.

3436 West Touhy Ave. • Chicago 45, Ill.



Porter-Cable Model A-3 "Take-About" Surfacer

Porter-Cable Model A-3 "Take-About" Surfacer

A lightweight easy-to-handle portable electric surfacer for high speed light duty sanding and grinding operations on metals, plastics, and other materials is announced by the Porter-Cable Machine Co., 300-4 Wolf St., Syracuse 8, N. Y. Designated as the Model A-3 "Take-About," the unit features a streamline, well-balanced design; aluminum die-cast polished frame; plastic handle; quick-acting trigger switch in the handle; silent chain drive; needle bearing drive and idler pulleys; and rubber-covered drive pulley.

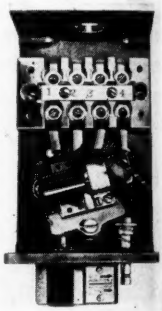
Specifications of the Porter-Cable Model A-3 Take-About Surfacer are as follows: motor, ¾ h.p., universal d.c.—a.c., 25-60 cycle, single phase, either 115 or 220 volt; belt size, 3 x 24 inches; belt speed, 1,600 s.f.p.m.; pulley size, 3 x 2¼-inch diameter; size overall, 5⅛x16x7¾; net weight, 14 lb.; shipping weight, 21 pounds.

Kidde Pressure Switch

A pressure switch designed for use with built-in carbon dioxide fire extinguishing systems is announced by Walter Kidde and Co., Inc., 140 Cedar St., New York 6, N. Y. According to the the manufacturer, the switch assists in isolating the fire by automatically cutting off electrical circuits in fans, blowers, or other electrical equipment when the extinguishing system is placed in operation.

The Kidde Pressure Switch is of a self-contained, mercury contact type suitable for applications which employ gas or air pressure. The switch is connected by a bleed pipe from the main distribution line and is operated by the carbon dioxide in passing through this distributing piping to the discharge nozzles. The gas pressure actuates a plunger which trips the breaker arm of the switch, opening or closing the circuits desired.

The Kidde Pressure Switch is available for the control of two, three or four circuits, each of which may be wired for normally open or normally closed operation. The switch is provided with a manual reset for restoring circuits to their original positions after operation due to fire.



Kidde Pressure Switch

Those Perfect Partners For Pickling

NEP and SUMFOAM

• TO SAVE ACID IN PICKLING •

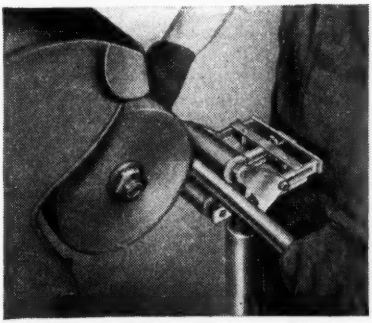
• TO PREVENT FUMES •

THE WM. M. PARKIN CO. • 1102 HIGHLAND BLDG.

PITTSBURGH 6, PA.

"Presto" Semi-Automatic Tube Polishing Machine

Unusually fast polishing of tubes without spiral effect is said to be afforded through the use of the "Presto" Semi-Automatic Tube Polishing Machine introduced by Thee Manderscheid Co., 605 W. Washington St., Chicago 6, Ill. Completely portable and adjustable for use with any polishing lathe, the unit is merely pushed up to the wheel and adjusted for height and to fit the tube to be polished. Total setting time required is said to be less than five minutes.



"Presto" Semi-Automatic Tube Polishing Machine in Use

Tapered rubber rollers provided on the polishing machine are claimed to hold the tube against the polishing wheel with uniform pressure. As the tube rotates, it is automatically fed slowly across the polishing wheel at a uniform rate, thus providing an evenly polished tube. The rate of feed can be easily and accurately adjusted to suit the job. A foot pedal is used to advance the rollers to provide the desired polishing pressure.

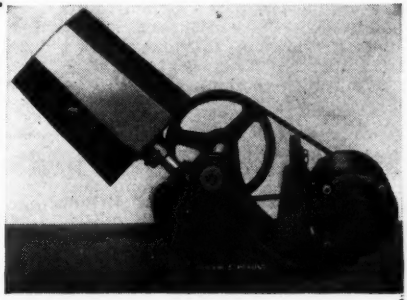
The Presto Semi-Automatic Tube Polishing Machine is adjustable for polishing tubing from 1 to 5 inches in diameter and of any length.

Iridite Galvon

Maximum resistance to white corrosion is said to be afforded galvanized

The Belfor Barrel

for Processing Small Lots



A tiny tumbling barrel especially designed for use where small objects are to be processed, and where lesser quantities are handled either in production or in the laboratory.

The barrel of octagonal shape measures approximately 6 inches across the flats at the open end, 5 inches at the attached end and 7 inches deep. It is driven by 1/20 H.P. motor. The barrel may be readily removed from the end of the shaft for loading and unloading. For TUMBLING, a plain steel welded barrel is provided.

For PLATING, a steel rubber-lined barrel with necessary electrical equipment may be procured. Hence, with the same base and motor, the addition of one steel and one rubber-lined barrel, the unit may be used for either tumbling or plating.

MUNNING & MUNNING, Inc.

Engineers and Manufacturers • Electroplating Equipment and Supplies

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products through the use of Iridite Galvon now being marketed by Rheem Research Products, Inc., 2523 Pennsylvania Ave., Baltimore 17, Md. Like its predecessor, Iridite Olive Drab for zinc and cadmium-plated parts, Iridite Galvon is applied by simple dipping at normal room temperatures. No special equipment or personnel is required, and no electric current is used in the process. The basic coating is said to be susceptible to various dye colors.

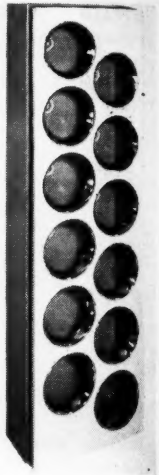
Accelerated corrosion tests conducted under U. S. Bureau of Standards salt spray specifications are said to have indicated no signs of white corrosion products on hot-dip galvanized panels after 236 hours. Iridite Galvon can be applied either to complete assemblies, parts, or to galvanized sheet previous to fabrication.

"Quality" Insulated-Reflective Panels

A line of insulated-reflective panels whereby infra-red ovens may be readily constructed is now being offered by Infra-Red Engineers & Designers, 1633 E. 40th St., Cleveland, Ohio. The panels are available in two types—lamped and solid—both of which are standardized upon a width of 15 inches and a depth of 9 inches. The length depends upon the number of lamps. Both types are interchangeable.

Solid units may be converted into lamped units at any time with standard parts. All rear housings are drilled for wiring ducts regardless of whether they are lamped or solid. Both lamped and solid units are equipped with adjustable focus springs for delicate adjustments of lamp filaments when necessary.

Semi-gloss white porcelain enamel is the standard finish for the faces of both "Quality" Lamped and Solid Insulated-Reflective Panels. Thus, the panels, it is claimed, cannot corrode and are easily cleaned and non-oxidizing. When built into infra-red ovens, the faces of the panels become a continuous insulated-reflective interior wall, while the backs automatically and simultaneously become a continuous wall of single sheet steel, painted gray. Ovens thus constructed are said to be actually triple walled.



"Quality" Lamped Insulated-Reflective Panel

WE RECOVER YOUR
SOLVENTS and THINNERS
from Sludge, Waste, Wash, Spoiled Lacquers, etc.
AND SAVE YOU MONEY
Each shipment—one drum or a carload—receives PROPER and SEPARATE TREATMENT.
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Write to:
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241 Brunswick St. Hammond, Ind.

Oakite "Tri-San"

Known as Oakite "Tri-San," a triple-duty sanitation material for deodorizing, cleaning, and disinfecting in one operation is announced by Oakite Products, Inc., 20 Thames St., New York 6, N. Y. The material is a white powder which, when dissolved in water, forms a clear, odorless solution. Application to surfaces is made in the same manner as

For a real good polishing job use
KEYSTONE EMERY
TURKISH — NAXOS — AMERICAN
KEYSTONE EMERY MILLS *Write for Sample* 4316 Paul St., Phila., Pa.

with any cleaning agent.

Designed for simplifying plant hygiene procedures through its triple-duty properties, Oakite Tri-San is said to have a wide application in industrial plants, particularly where odor control is a recurring problem.

American Long-Lyfe Blast Nozzle

American Foundry Equipment Co., 525 S. Byrkit St., Mishawaka, Ind., announces the addition to its line of Long-Lyfe blast nozzles of a nozzle with Norbide boron-carbide insert to provide for long service life. As an added feature, the insert is jacketed in an abrasion-resistant alloy steel.

According to the manufacturer, the nozzle is guaranteed for 1,500 hours of service when used with steel shot or grit and for 750 hours when used with silica sand.

"Kriegr-O-Dip" Color Glue

A product for use where the laminating or bonding of plastics and color together is desired, to be known as "Kriegr-O-Dip" Color Glue, is announced by the Krieger Color & Chemical Co., 6531 Santa Monica Blvd., Hollywood 38, Calif. The material can be used in painting the surfaces of Lucite, Plexiglas and cellulose acetate parts. A shell effect can be obtained by first dyeing the plastic part in Kriegr-O-Dip liquid dye, either amber or yellow, and then painting brown color glue over the dyed surfaces.

Once applied, Kriegr-O-Dip Color Glue has the appearance of being an actual part of the plastic. It can be thined with ethylene dichloride to make pastel shades and thickened with Lucite or Plexiglas sawdust. The material can be obtained in red, blue, yellow, orange, brown, black, and green colors, all of which are intermixable, thus enabling the user to obtain an unlimited number of colors and shades.

Available in pint, quart and gallon containers, Kriegr-O-Dip Color Glue is a toxic material and should be used only in a room that is well ventilated. In addition, rubber gloves are recommended for use in connection with the application of the material.

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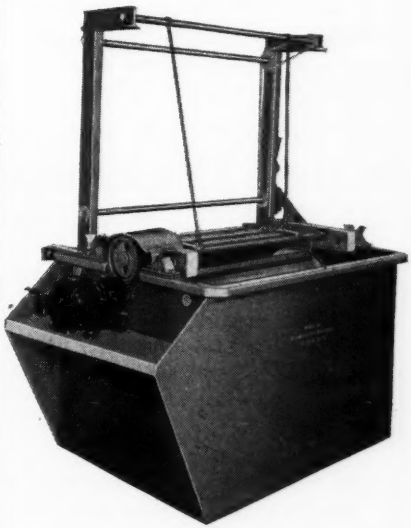
SAVINGS in both Manpower and precious Time . . . by using a unit with OUTSTANDING FEATURES! Permits heavy loads . . . all conductors, tanks, rods, connections and switches have ample current carrying capacity . . . Cylinders constructed from heavy laminated bakelite are standard in all barrels.



NU-WHITE PRODUCTS CO.
2288 University Ave.
ST. PAUL 4, MINNESOTA

"The Udylite Process of Bright Nickel Plating" is the title of an eight-page illustrated bulletin prepared by The Udylite Corp., 1651 E. Grand Blvd., Detroit 11, Mich. The bulletin discusses the advantages of this process and lists a number of products on which Bright Nickel has been used. Udylite equipment for the Bright Nickel process is also illustrated and described. Copy free upon request.

"Traversite," a wetting agent for preventing the accumulation of paint pigment on the walls, lines, and circulating systems of water wash type spray painting booths, is the subject of a bulletin now being distributed by The Penetone Co., Tenafly, N. J. The bulletin provides a brief, but adequate, description of the operation of Traversite in the spray booth, with full directions for its most effective use. Copy free.

Opportunity Section

Wanted — Chemist-Salesmen

Must have had at least two years actual plating room experience. Preference given war veteran.

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WANTED

A foreman plater, and a control chemist, Michigan production plating shop with excellent post war opportunity has opening for a foreman plater and a control chemist. In writing state age, experience, and salary expected. All replies confidential. Address reply to Box 77, c/o Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

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To expand solvent markets for substantial industrial chemical manufacturer. All our personnel know of this ad. Please submit experience, qualifications, and salary expectations to Box No. 73, care of Products Finishing, 431 Main St., Cincinnati 2, Ohio.

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PAINT FINISHING UNIT—Complete continuous cleaning, dipping and baking unit, 16 feet wide by 120 feet long. Capable of handling work 30" high by 120" long. There are two double roller chains through the system. The speed of the conveyor is variable 1 to 3 F.P.M. The unit washes, rinses, dries, dips and bakes in one continuous operation. For complete details and illustrations, write Morton Manufacturing Company, 5105-43 West Lake Street, Chicago 44, Illinois.

Protective and Decorative Coatings. By Joseph J. Mattiello. Published by United States Government Printing Office, Washington 25, D. C., 349 pages. Illustrated. Cloth binding, board covers.

This book is a compilation of lectures given by specialists of the Plastics Section of the Research and Development Branch of the Military Planning Division, Office of the Quartermaster General. The purpose of these lectures was to present to the individuals in the office of the Quartermaster General and other Arms, Services, and Government agencies who would come in contact with these materials with the latest developments in organic coatings.

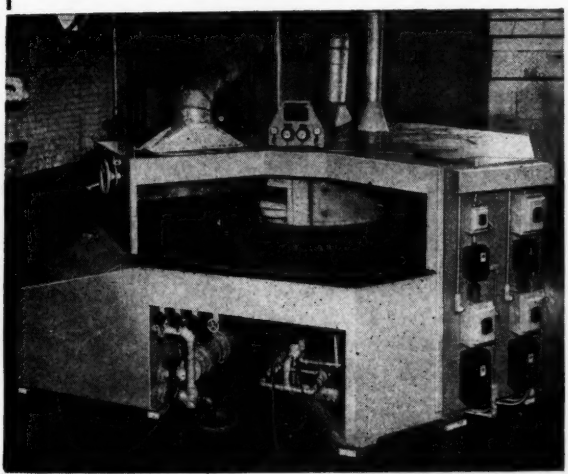
The term "coatings" as used in the book includes such materials as paints, varnishes, lacquers, textile coatings, plastics, and similar materials whose functions may be singly or collectively protective, decorative, or of a technical nature. The lectures supply basic principles and technical information pertaining to organic coatings, with specific emphasis on the newer developments during the war period in synthetic oils, synthetic resins, solvents and thinners, driers, pigments, and plastics which have a direct application to the war effort. Because of the general and specific importance of the subject of "color" and of "visual and infra-red reflectances of pigments and coatings" these subjects are discussed at considerable length.

An important application of the book to the present crisis in our national life is the aid given to the three most important problems confronting the coating industry. They are: (1) The shifting availability of raw materials, (2) the conservation of raw materials and coatings, and (3) the preparation of intelligent and workable specifications.

This book should not be confused with that of another having the same title and published in five volumes by Johr Wiley and Sons, Incorporated.

Vonnegut Brush-Backed Sander and Abrasive Head especially designed for finishing irregular surfaces is fully discussed and illustrated in an eight-page bulletin announced by the Vonnegut Moulder Corp., 1845 Madison Ave., Indianapolis 2, Ind. Copy of Bulletin No. 53 free upon request.

Post-war work will demand methods of highest Efficiency



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Washing, rinsing, drying and other surface treatment of metals must be done quickly and economically—must equal if not surpass present-day output.

For this work, the **Metalwash Roto-Table Metal Cleaning Machine** was designed, and has established an enviable record. Operated by one man. Turntable functions at various speeds. Handles large or small parts, showing adaptability for the broadest type of service wherever used.

Our Engineering Department can help you in your metal cleaning problems. Write us.

We also design and manufacture large or small machines for cleaning, pickling, rust-proofing, and drying processes.

METALWASH MACHINERY COMPANY
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The Finishing Touch

By J. A. Patterson

"Would you gentlemen mind if I step in there with you a minute—I just had my hair shampooed and they didn't get it dry!"